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JULY, 1960



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airlift

WORLD AIR TRANSPORTATION

In This Issue:

Vital White House Route Study

Boeing's 720 'Thunderbird'

Aeronautics vs. Space—Round 2

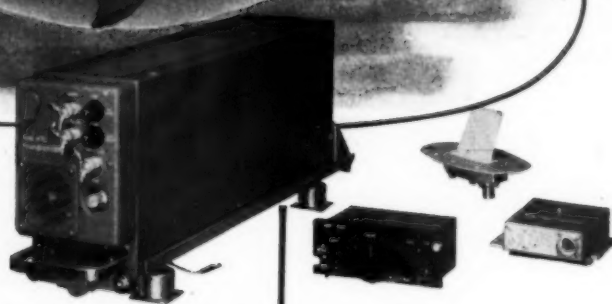


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The Convair F-106 sets record as world's fastest jet aircraft... powered by a Pratt & Whitney Aircraft J-75 jet engine

At Edwards Air Force Base on December 1, 1959, the F-106 all-weather interceptor roared to a new world speed record of 1,525.95 miles per hour. Flying a straightaway course at an altitude of 40,000 feet, it bettered the previous official world mark by 122 miles per hour.

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WORLD AIR TRANSPORTATION

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THIS MONTH'S COVER—How the U.S. is faring in the battle for the air traveler on the lushest of world air routes, the "blue-ribbon" Atlantic, as pictured by AIRLIFT's staff artist. As this issue goes to press, a new battle begins to rage as virtually every foreign flag airline restocks its arsenal with big jets. For the Atlantic traffic story, read Eric Bramley's analysis on pages 20 and 21.



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VANGUARD PAYLOAD UP BY 8,000 pounds —Landing weight up by 9,500 pounds

	Original specification	New specification (standard specs.)	Increase
Gross Take-off weight	141,000 lb	146,500 lb	5,500 lb
Max. landing weight	121,000 lb	130,500 lb	9,500 lb
Max. 'zero fuel' weight	112,500 lb	122,500 lb	10,000 lb
Max. payload	29,000 lb	37,000 lb	8,000 lb

■ The VANGUARD's payload has been boosted to 37,000 lbs. before entering scheduled service—8,000 lbs. more than advertised. This still leaves 1,600 lbs. in hand for even more development, equipment changes, or for customers' special needs.

■ Ten years experience has made the VANGUARD something unique in aviation history—a plane with a dual personality. Carrying 139 passengers and 9,000 lbs. of freight, the VANGUARD can turn around and make a handsome profit as a freighter, even when only 30% of the seats are sold. Two huge cargo holds provide three times the freight capacity of its closest rival, and freight handling was never easier with over four feet of working height and doors more than five feet wide.

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■ And the VANGUARD is fast. Recent route proving trials all over Europe have shown the VANGUARD to be faster than competitive jets on short hauls and only a matter of minutes slower on medium hauls of 1,000 miles or more.

■ Yet the difference in operating costs is startling — to say nothing of the VANGUARD's operating flexibility which means built-in reliability of schedule.

■ The VANGUARD's direct costs are as low as 1 cent a seat mile at 900 miles, and 1 1/4 cents at 300 miles.

■ And, on top of this, there is now the income from 4 1/2 tons of cargo which can still be carried even at 100% passenger loads.

■ The VANGUARD can now carry 139 economy-class passengers plus over 9,000 lbs. freight. Without interme-

diating refuelling, 100-passenger payloads can be carried over such important consecutive sectors as New York — Detroit — Chicago — St. Louis.

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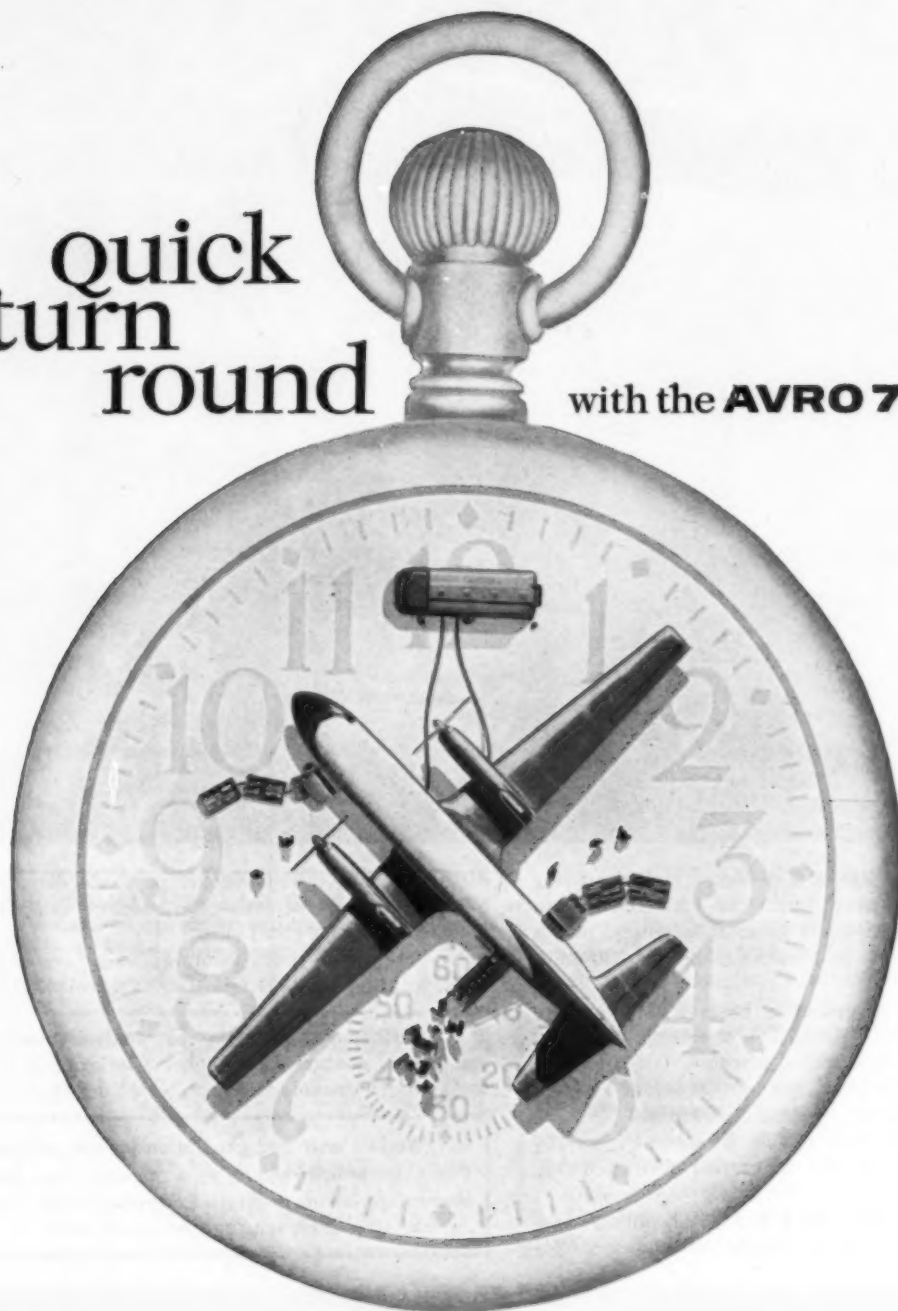
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Who Else, Mr. Boyd?

Who is responsible for excessive competition on many trunk routes?

CAB Member Alan S. Boyd has been saying in a number of speeches of late that the airlines are to blame. After all, the carriers applied for the routes, he says. All the CAB did was to do its best to oblige.

Surely Mr. Boyd can't be that naive. He is making a notable and highly intelligent record on the CAB. He's one of the best members in years. Yet he seems to have a blind spot in passing the buck on who is responsible for multiple competition.

Certainly, the trunk carriers applied for new routes. Some of the proposals bordered on the fantastic. Every trunk seemed to want to go everywhere. But once one airline applied for something new, its competitors could hardly sit back and do nothing. Defensive actions were hard to sort from offensive.

The Civil Aeronautics Board was created in 1938 simply because the airlines could not be trusted to regulate themselves as public carriers. The Board

was never under any obligation at any time to award a route simply because somebody asked for it. It was inherent in the law that the CAB was to act only in the public interest and endeavor to provide only that measure of competition which could be justified for a healthy industry. It was presumed at the time in the light of simple realities that each carrier would try to get as much as it could. The Board was created to be the judge, the inhibitor, the protector, the arbiter, the brake, as well as the steam valve.

In trying to defend the actions of his predecessors (which he shouldn't even find necessary to do), Mr. Boyd is on very thin foundation. It was the CAB that made the decisions. It doesn't quite make sense to pass the buck to those who were scrambling for everything they could get for fear competitors might get more. We wonder what Mr. Boyd thinks the function of CAB is if it isn't to use the sound judgment and responsibility spelled out for it by Congress.

Here's an Idea for Free

The airlines have adopted the new age of electronics and closed-circuit TV for everything except the customer far from an airport. We have a suggestion.

It requires no imagination to ponder the fate and frustrations of a customer in mid-town Manhattan when he's booked on a flight and the weather is obviously marginal.

All he wants to know is whether his flight is still scheduled out on time, or diverted to another airport, or cancelled.

He calls the airline. He's told to hang on. Much time passes. He gives up. All he wanted to do was to ask a simple question and get a simple answer. He didn't want a reservation for next week. So he either changes his travel plans and heads for the railroad, or he hops a cab to go to the airport to look at the departure board which he couldn't see from his phone booth, and take another cab to the airport where his plane has been diverted.

This is an electronics age. It can be put to use. If one wants to know the time, or the weather, he simply dials a number and listens to a recording. Hundreds may be doing this at the same time.

Why can't a customer dial a special number listed for "Flight Information" and listen to a tape recording—or a direct voice—advising the flight status of every schedule for the next three or four hours.

"Flight 201 to Portland cancelled. Flight 148 to Washington diverted to Idlewild departing at 2:50 p.m. All flights after 6 p.m. doubtful. Flight 127 two hours late will depart about 4 p.m." And so on. As soon as the list is completed, the voice begins repeating, and changes are made as required.

Wouldn't it be nice to dial a number to hear a taped voice say "All flights up to 10 p.m. now scheduled to arrive and depart on time except departure Flight 601 to Kansas City delayed one hour." Wouldn't this save a lot of telephone and clerical trouble?

The customer can't get the information he wants at peak periods or when the weather is bad. There are just so many trunk lines and clerks. The airlines could save time and money—and please customers—by making that closed-circuit TV or flight information board available to hundreds of ears at any given time by doing just what the telephone company has done with weather information. If the customer wants to talk to somebody—then let him call reservations. Just help out the poor guy who doesn't want to talk—he just wants to listen.

Wayne W. Panish

Problem . . . and Cure

Following is an exchange of letters which points up a problem faced by many air travelers . . . and suggests a cure.

To the Editor:

As an attachment I am furnishing you with a copy of a letter we received from Mr. Joseph C. Feagley, Vice President & General Manager, Packaging Materials Operations, Armstrong Cork Company, Lancaster, Pennsylvania.

In essence, the underlying problem which the attachment describes is medical in nature, but perhaps jointly we can be of some additional service to our customer with respect to the literature he requests.

Can your people be of some help to us in this regard?

JOSEPH D. STANICK
Manager, Customer Relations
Braniff Airways
Dallas, Texas

Mr. Joseph D. Stanick
Manager, Customer Relations
Braniff International Airways

Dear Mr. Stanick:

This will acknowledge your wire of April 25, but I thought I better write you this note to see if I can get any good advice from you.

You are probably familiar with the

flight pattern that I followed between April 12 and 15. In any event, it was an American 707—Idlewild to Dallas; then, two days later, Braniff Electra to San Antonio; on the 15th, Braniff Electra back to Dallas, Braniff 707 to Idlewild, New York Airways helicopter to Newark, and Allegheny DC-3 to Lancaster.

In the old days when I did a lot of flying on DC-3s I found the results disastrous if I had a head cold. I thought pressurization had done away with this forever, but I had an entirely similar reaction on the 707 flights both outbound on the 12th and backbound on the 15th.

The reaction was the same on the Electra flight to Dallas on the 15th, but on the 707 flight to Idlewild the effect was terrific. No problem was connected with the helicopter flight and, if anything, the DC-3 flight from Newark to Lancaster to a degree relieved some of the heavy compression effects that I had suffered when the 707 came down at Idlewild.

Since then I have found it necessary to have a series of head treatments coupled with penicillin shots. So far I have had four treatments, and while physically I feel quite well, I still have plugged-up ear tubes.

Primarily I am seeking information, and if there is anything in current literature of the flight companies warning anyone about such a reaction due to a head cold, I am not familiar with it.

Incidentally, I used a jet flight to San

Francisco in August, 1959, and also on return from Los Angeles without any difficulty, but I am now faced with the necessity to go to the Coast the latter part of June and will no doubt hunt a slower-transportation piston ship where probably the cabin is pressurized at 5,000 feet, rather than the 7,000 feet which I believe is the level at which you equalize on the 707s.

What can you tell me?

JOSEPH C. FEAGLEY
Vice President and
General Manager
Armstrong Cork Company
Lancaster, Pennsylvania

To the Editor:

The letter which you refer to is quite interesting; however, I do feel that the difference between 5,000 ft. cabin pressurization and 7,000 ft. cabin pressurization is really not too much. It is not the amount of pressurization unless one gets quite high, but rather the time interval in which the let-down and the de-pressurization is accomplished that is of physiological and medical interest.

While it is true that the jet is a better pressurized airplane it does, however, operate at higher ambient altitudes, therefore actual cabin pressurization might in many instances be more comfortable in pressurized lower flying aircraft. However, the rate of descent has been limited by federal regulation to 300 feet per minute. There is a slight possibility that because of terrain or landing conditions this may have been exceeded in the case of the writer of this letter and, in as much as this man had past trouble in clearing his Eustachian tubes, he just could not keep ahead of the descent depressurization.

I would suggest that this individual consult an ear, nose and throat doctor and have examinations made of the orifice of the Eustachian tube, which is a tube that leads from the throat to the middle ear. In some people, due to chronic inflammation, there is a ring of lymphoid tissue around this orifice which can be easily melted down by medication or radium. This will result in a much more pleasant experience as far as keeping ahead of depressurization is concerned.

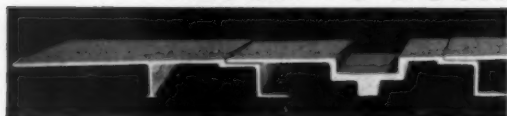
There are also available, on nearly all certified airliners (especially those that have medical men in attendance at their base medical department) medications which one can take to open up the Eustachian tube area when he has a cold.

I still do not feel that one should sacrifice the comfort, lack of vibration, reduced noise and travel time that one can find in the jet, compared to piston type aircraft, because of these difficulties. I believe that this gentleman should obtain the medical survey recommended above and take along with him mucous membrane decongestant drugs, such as Nolumine, if necessary.

Just before descent, no matter on what aircraft he travels, a Benzedrex inhaler to shrink all the mucous membranes in his throat and the Eustachian tube orifice would give this man quite a bit of comfort.

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BOOKS

Three Years Off This Earth; Alexis Klotz (TWA Captain). Published by Hooper Publishing Co., San Francisco; 396 pp. In limited supply. \$5.00.

An unusual (self-financed) autobiography of an obviously self-centered but most capable transport pilot overflowing with intimate anecdotes of early airmail and prewar airline days, the wartime Air Transport Command and a smattering of postwar events. Admittedly no writer, Klotz isn't easy to read but would be hard to match for an eventful life. Notable are his three missions to Moscow, including the Wendell Willkie and Cordell Hull visits; experiences as Gen. Harold George's pilot to China, and finally, before a hearing of the Civil Aeronautics Board (with one member asleep) on an ATC violation filed by CAA.

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When & Where

JULY

July 14-16—National Association of State Aviation Officials, summer board of directors meeting, Atlantic City, N. J.
July 18-19—Association of Local Transport Airlines quarterly regional meeting, Beverly Wilshire Hotel, Beverly Hills, Calif.

AUGUST

Aug. 16-17—Air Freight Carriage Conference, Edgewater Beach Hotel, Chicago.
Aug. 22-24—Airlines Electronic Engineering Committee, Sheraton Mt. Royal, Montreal, Canada.
Aug. 23-25—Institute of Radio Engineers, Western Electronic Show and Convention, Ambassador Hotel, Los Angeles.
Aug. 28-Sept. 5—National Aeronautic Association, 1960 national air rally, Municipal Airport, Orange, Mass.

SEPTEMBER

Sept. 5-11—Society of British Aircraft Constructors, 1960 Farnborough flying display and exhibition, Farnborough, England.
Sept. 6-24—ICAO, legal committee, 13th session, Montreal.
Sept. 8-9—1960 Engine and Operations Symposium, Airwork Corp., Millville, N. J.
Sept. 12—IATA, 16th annual general meeting, Copenhagen, Denmark.
Sept. 12—IATA, traffic conference I, Cannes, France.
Sept. 12-16—International Council of the Aeronautical Sciences, 2nd congress, Eidg. Technische Hochschule, Zurich, Switzerland.
Sept. 14-16—National Association of State Aviation Officials, annual meeting, Worl Hotel, Jackson, Wyoming.
Sept. 20-22—National Business Aircraft Assn., annual meeting and forum, Ambassador Hotel, Los Angeles.
Sept. 25-27—International Northwest Aviation Council, 24th annual convention, Harrison Hot Springs, British Columbia.
Sept. 25-28—National Association of Travel Organizations, annual meeting, Cavalier Club, Virginia Beach, Va.
Sept. 26-Oct. 7—International Labor Organization, civil aviation meeting, Geneva.

OCTOBER

Oct. 3-5—Air Traffic Control Assn., fifth annual meeting, Sheraton-Palace Hotel, San Francisco.
Oct. 10-14—Society of Automotive Engineers, national aeronautical meeting, Ambassador Hotel, Los Angeles.



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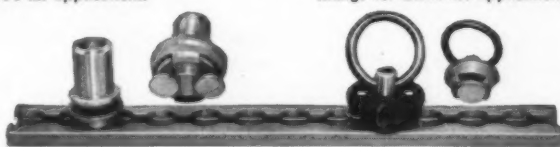
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Trunkline traffic is soft in spots. Some lines are behind forecast. Business is ahead of last year, but not up to expectations. In May, coach traffic saved the day, up 19.2% over last year, while first-class fell 2.6%. Total traffic was up 6.5%, seats increased 8.3%, load factor dropped one point to 59%. June wasn't sensational, either. Reasons are hard to pinpoint. In some areas, hotel and resort registrations are off. Certain cities are soft—Chicago and Twin Cities, for example.

Some eyebrows raised considerably in the airline industry recently when Continental Air Lines elected Jay A. Pritzker to its board and Capital elected Gordon Y. Billard. Wealthy Chicago lawyer Pritzker and New York investment banker Billard were in a group which tried (unsuccessfully) to get financial control of Western Air Lines a few years ago, presumably for purposes of merging with another carrier. But a Capital source denies that their reappearance on two boards is in any way linked.

More fireworks in August on maintenance. FAA is moving in on airlines with plan to set up maintenance standards—yardsticks with which one could be compared with another. Few managements appreciate its potential impact, but it stems from same source in FAA that led one maintenance official to plead that Administrator Quesada "inject rational, practical judgment into his growing giant (FAA) lest its musclebound strength strangle us all at the opening of our great (jet) opportunities."

Russians will keep July 18 date with U.S. for civil air talks in Washington. After U-2 incident, U.S. had doubts that Reds would show up. But Aeroflot's Gen Y. Loganov, who will head Russian delegation, says talks will proceed—even adds that exchange of civil air rights will result.

Price increase on Convair jet transports is now effective, averages 4% to 4.5%. Boosts apply to base prices of \$3.8 million for 880 and \$4,360,000 for 600. Convair is third jet builder to raise prices, following Boeing and Douglas. Company is showing airlines its proposal for a Model 60, short-medium range version of 880 which can be delivered in mid-1962 if orders justify production.

Reservations philosophies are widening. One carrier is set to spend upwards of \$40 million over next 10 years for a computer to do the job. Others are leaning toward no reservations, on-plane ticketing. Consensus is reservations will always be needed for long-haul or interline sales, but may be on the way out in short-haul, high-density markets.

Air Union will get a major test in Africa this fall. The combine—Air France, Sabena, Alitalia, Lufthansa—will buck the Commonwealth pool, including BOAC, South African Airways, East African Airways, Central African Airways. Big battle for traffic is expected.

How big is a jet? Plenty big, is TWA's experience. CAB order to halt one-plane service to Florida from west coast forced company to hire 25 more ground handling personnel at St. Louis for quick shift of baggage and cargo from one jet to another. On the brighter side: the LA-Miami flight still produces TWA's best load factor, higher than trans-continentials.

First international local service line is West Coast. The route: Spokane to Calgary, Alberta, a 1 hr. 25 min. F-27 flight.



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Pilots, Quesada Resume Battle

Differences between airline pilots and FAA exploded into wildcat walkouts at Eastern and Pan American that ended only after court orders and a tough ruling by FAA Administrator E. R. Quesada. Basic grievances, however, remained unsettled.

Trouble started when an EAL DC-8 crew refused to fly with an FAA inspector in the forward seat usually occupied by the third pilot. EAL obtained a temporary restraining order requiring pilots to fly the jets, and FAA said any pilot who refused more than once to carry an inspector in the forward seat would have his certificate suspended. Pilots claimed removal of the third pilot from the seat "breaks up the pilot team"; FAA said the big jets were certificated for pilot, co-pilot and engineer.

Despite the court order and FAA ruling, EAL pilots reported "sick" and operations were 90% disrupted. Meanwhile, American, Pan American and TWA, which also have third-pilot contracts, got court orders requiring pilots to fly after ALPA served notice that jet crews would not take off with inspectors in the third seat. And Quesada threatened to suspend an entire crew when its Captain first refused to allow an inspector to occupy the seat.

The walkout spread briefly to PAA, but pilots returned to work when a judge warned that those who defied the court would get "harsh treatment." Following a second court order, and spurred by ALPA, which said it did not sanction the walkouts, EAL pilots returned.

Pilot-FAA disputes still smoldered, however. Inspectors, retirement at 60 and rulings that pilots must remain in their seats are among items that rankle ALPA. Quesada said the third-seat controversy was only the surface issue and that the "real reason" for the walkouts was because FAA is "active in the application of rules that do exist, and the correction of many abuses that have occurred for decades."

NAL, Delta Favored for Transcontinentals

In one of CAB's biggest cases, National and Delta have been recommended for southern transcontinental routes.

Examiner Edward T. Stodola favored NAL for a Florida-California route across the southern part of the southern transcontinental area, and Delta for operations along the northern edge.

He said it is not intended that Delta's route serving the more northern markets should be competitive with NAL's service. Delta flights out of Florida would be required to stop at Atlanta.

Other routes would go to American, Braniff, Continental and Eastern. Stodola's recommendations:

National: From Miami, Orlando, Jacksonville, St. Petersburg/Clearwater and Tampa through New Orleans to Houston and (1) beyond Houston to San Francisco/Oakland via San Antonio, El Paso, Tucson, Phoenix, San Diego and Los Angeles/Long Beach, and (2) beyond Houston to San Francisco/Oakland via Dallas, Ft. Worth, Lubbock, Albuquerque and Las Vegas.

Delta: From Miami, Orlando and Jacksonville through Atlanta (compulsory stop), Ft. Worth and Lubbock to Albuquerque, and (1) beyond Albuquerque to Los Angeles/Long Beach via Tucson, Phoenix and San Diego, and (2) beyond Albuquerque to San Francisco/Oakland via Las Vegas. Flights out of New Orleans to the west coast must stop at Dallas/Ft. Worth.

Braniff: Ft. Worth to Miami-Ft. Lauderdale via Dallas,

Houston, New Orleans, Tampa and St. Petersburg/Clearwater.

Continental: Houston to Los Angeles/Long Beach via San Antonio, El Paso and San Diego.

American: Certificate amended to close gap between Los Angeles and San Francisco.

Eastern: Atlanta to San Antonio via Birmingham, Jackson, Shreveport, Dallas and Ft. Worth.

Locals' Rate of Return Boosted

On the same day that it granted a trunk fare increase, CAB gave local service lines a big boost by increasing their rate of return on investment from 9.5% to 12.75%.

Locals will now find it easier to attract capital on reasonable terms. And because the 12.75% applies only to future final mail rates, carriers will pressure CAB to complete their rate cases quickly.

In setting 12.75%, which will be used in determining subsidy, CAB said that in no case would the return be less than 3¢ per plane-mile (where investment of a local is less than 25¢ per revenue plane-mile). The former 9.5% had a 2¢ floor. On rates fixed retroactively, return will continue at 7%—CAB did not adopt its examiner's recommendation that this be raised to 8.5%.

The Board denied requests that the profit element in subsidy cases be fixed on "operating margin" and said that rate of return will continue to be used.

Trans-Texas and Mohawk are now on final rates, but the other 11 lines are still receiving temporary pay—which does not include a rate of return. Thus, a rash of rate cases is expected. The decision may also speed CAB work on a uniform class rate for the industry, to replace the piecemeal system now in effect.

Trunk Fares Go Up 5%

The 12 trunklines got the green light from CAB to raise fares 5% on July 1, a move that will increase revenues by \$84 million annually. The 5% consists of a 2½% increase plus \$1 per one-way ticket.

CAB, following its announcement in the General Passenger Fare Investigation that trunks should be allowed earnings of 10.5% on investment "over an extended period," was flooded with requests for fare hikes ranging from 5½% to 12%. In allowing the 5%, it said the full increases proposed "were not warranted."

Although at least some carriers felt 5% was not enough, all of them filed for the increase, plus some local service lines.

The 2½% boost will continue indefinitely, but CAB "contemplates" that jet surcharges and the \$1 per ticket will expire June 30, 1961. This gives the agency control to review earnings next year and means that trunks must again justify the \$1 to keep it in effect.

The 5% should give carriers the opportunity to achieve a 10.5% return "during a reasonably extended period," CAB said, adding that it was also trying to "provide sufficient financial latitude to enable carriers to experiment with promotional fares in view of the increased capacity . . ." However, some industry officials questioned whether the raise would produce a 10.5% return.

British Jet Engine Approved for 2,000 Hrs.

A few days after a U.S.-built jet engine received the first approval to operate more than 1,000 hrs. between

overhauls, a British-made powerplant was okayed for 2,000 hrs.

After 19 months in airline service, the Rolls-Royce Avon Mk. 524 used in BOAC's Comet 4s became the world's first commercial jet to reach the 2,000-hr. mark. Approval was granted by Britain's Air Registration Board. The Avon has been chosen by 18 airlines.

Overhaul time on Pratt & Whitney's JT3C was extended by FAA from 1,000 to 1,200 hrs, for TWA and Pan American. This marked two firsts for U.S. jets: first 200-hr. extension, first engine to top 1,000.

Meanwhile, Rolls-Royce was reported to have arrived at a fix for another of its engines which has been having trouble—the tyne turboprop. Discovery of a powerplant fault grounded the Vickers Vanguard and Canadair CL-44 freighter. The fix involves a new forging of a weak turbine disc which had shattered in some Tynes.

Capital Continues Fight Against Foreclosure

Debt-ridden Capital Airlines, its board of directors and management reorganized (*AIRLIFT*, June), continued efforts to stave off foreclosure by Vickers.

With new board chairman Thomas D. Neelands Jr. trying to work out financing, Capital fought off a CAB investigation by withdrawing its subsidy application. Approving the withdrawal and dropping the probe, CAB said management should be given "every opportunity" to work out its problems, but warned it will keep a close watch on developments.

Vickers granted Capital's request for delay of foreclosure to June 27 and further extension was expected.

Gordon Y. Billard, New York investment banker, was added to the board and executive committee to represent a "protective committee" formed to look out for interests of holders of \$12 million of debentures.

The dissident Capital Shareholders Assn., employee-stockholder group, called management changes "mere window dressing," mailed a proxy statement asking authority to call a special meeting to unseat present directors. Management attacked the group, stating that its activities may harm negotiations with Vickers.

CAB Warned to Stay Out of Scheduling

A storm of protest hit CAB over the issue of whether the agency can dictate airline schedules. The fight may end up in court.

CAB had ruled that Baltimore's air service is inadequate in 29 markets. Airlines were ordered to consult with the Board's Bureau of Air Operations to correct the situation. Roundtrip single-plane service with a maximum of two stops will be required in all Baltimore markets which generate 10 or more passengers daily—or where CAB finds this number is potentially available.

Airlines minced no words in telling CAB that when it gets into scheduling it is taking over a management function. They also said the agency has no legal right to supervise schedules or impose conditions on timing of flights. Unless the order is reversed, court action is likely.

Airlines Get Military Mail

The long battle by U.S. international airlines to take over carriage of ordinary military mail from MATS ended successfully. Still unsettled is their proposal to carry military passengers and cargo on regular flights at reduced rates.

Pan American, TWA and Seaboard & Western are carry-

ing the Atlantic mail, estimated at 5,000 tons a year, at a rate of 27.3¢ a ton-mile. Pacific service will start later.

PO Expands Surface Mail by Air

Despite stiff opposition in Congress, the Post Office expanded the airlift of first-class mail.

New routes: New York, Washington/Baltimore and Miami to San Juan, New York-San Francisco, Chicago-Denver, Denver-Salt Lake, Chicago-Salt Lake, Dallas/Ft. Worth-Chicago, Boston-Cleveland, Boston-Chicago. Airlines are paid 50% of air mail rates.

Briefs

First turbofan-powered jet transport, an American Airlines Boeing 707-120B, made its first flight at Seattle. Following FAA certification, AA will convert its 24 Boeings to the new configuration, which has maximum cruise speed of 610 mph. Engines are Pratt & Whitney JT3Ds.

A new 21,000 lb. thrust aft-fan engine will be made available by General Electric in about two years. Designated MF239C, the engine is a growth version of the J79. Meanwhile, GE received FAA certification of its aft-fan CJ805-23 (15,850 lbs. thrust) and CJ805-23A (16,100 lbs.).

CAB awarded Lake Central a route between Detroit and Cincinnati via Dayton, Columbus and Toledo. TWA's authority to serve the route was terminated.

Resort Airlines agreed to sell its Caribbean tour certificate to Trans Caribbean Airways. CAB must approve the deal. Resort will continue in military cargo business.

A DC-8 spares pool agreement was signed by KLM, Alitalia, Japan Air Lines, Pan American, SAS and Swissair. Included are 25 stations served by two or more of the lines. Agreement covers spare engines.

Pan American reduced its stock interest in Panair do Brasil from 48% to 30%, selling 79,200 shares to Brazilian investors. Price was not disclosed.

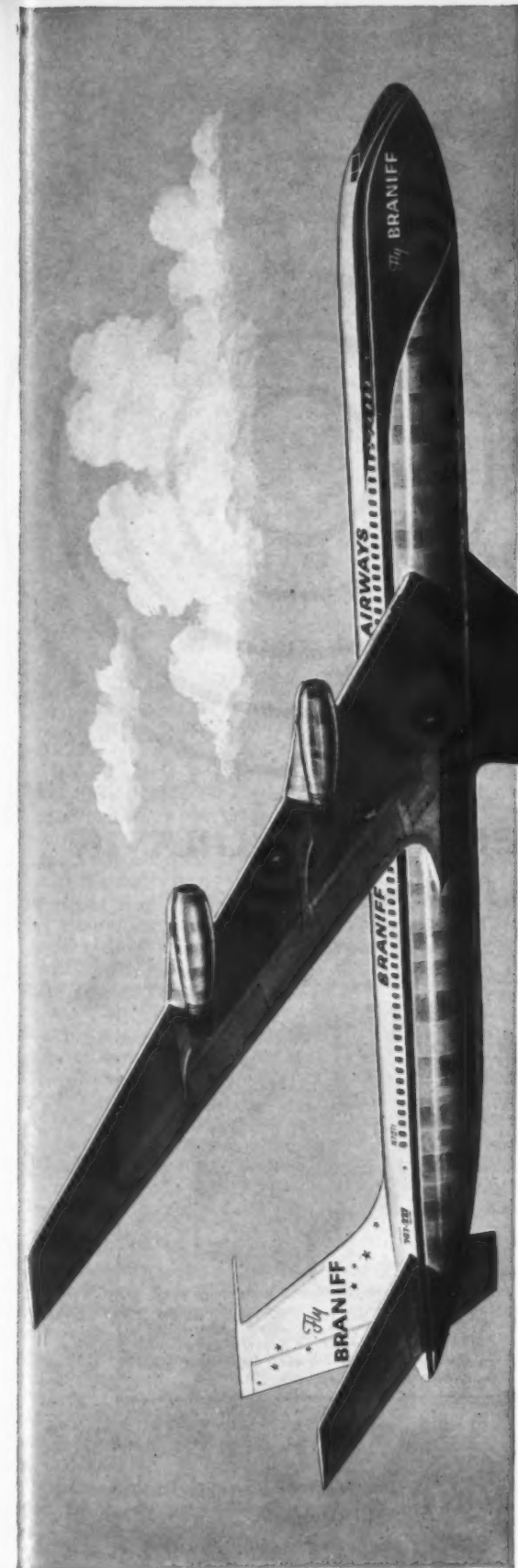
Reduced-fare commuter service is planned by Allegheny Airlines from Philadelphia to Boston and Providence, if CAB allows new tariff to become effective. Similar flights now operate Philadelphia-Pittsburgh.

Domestic airlines exempted an Air Traffic Conference resolution covering advertising ethics from policing by ATC's enforcement office. Braniff and Western, fined for certain advertising practices (*AIRLIFT*, June) threatened to withdraw from the resolution unless the exemption went through. Frontier joined them. All three will now remain in.

New on the Order Books

SALES: Delta: Ordered three more Convair 880s, deliveries in Aug. and Sept. 1961. **Bonanza:** Obtained two more F-27s under conditional sales contract with Fairchild. If BAL cannot arrange financing by Aug. 19, Fairchild will buy back the planes at purchase price of \$708,000 each less rental fee. **Slick:** Signed definitive purchase agreement with Canadair for two CL-44Ds, deliveries in Sept. and Oct. 1961, with option on four more. **British European:** Ordered two more Comet 4Bs, bringing total order to nine. **Ansett-ANA:** Australian carrier ordered six French twin-engine turboprop Super-Broussards to replace DC-3s.

FINANCING: Aloha: Received approval of \$2.2 million government-guaranteed loan toward purchase of three F-27s. **Qantas:** Arranged \$40 million financing for three Boeing 707-133Bs, modification of present seven 707s to fan engines, and wing modification. Financing includes \$25.5 million Export-Import Bank loan.



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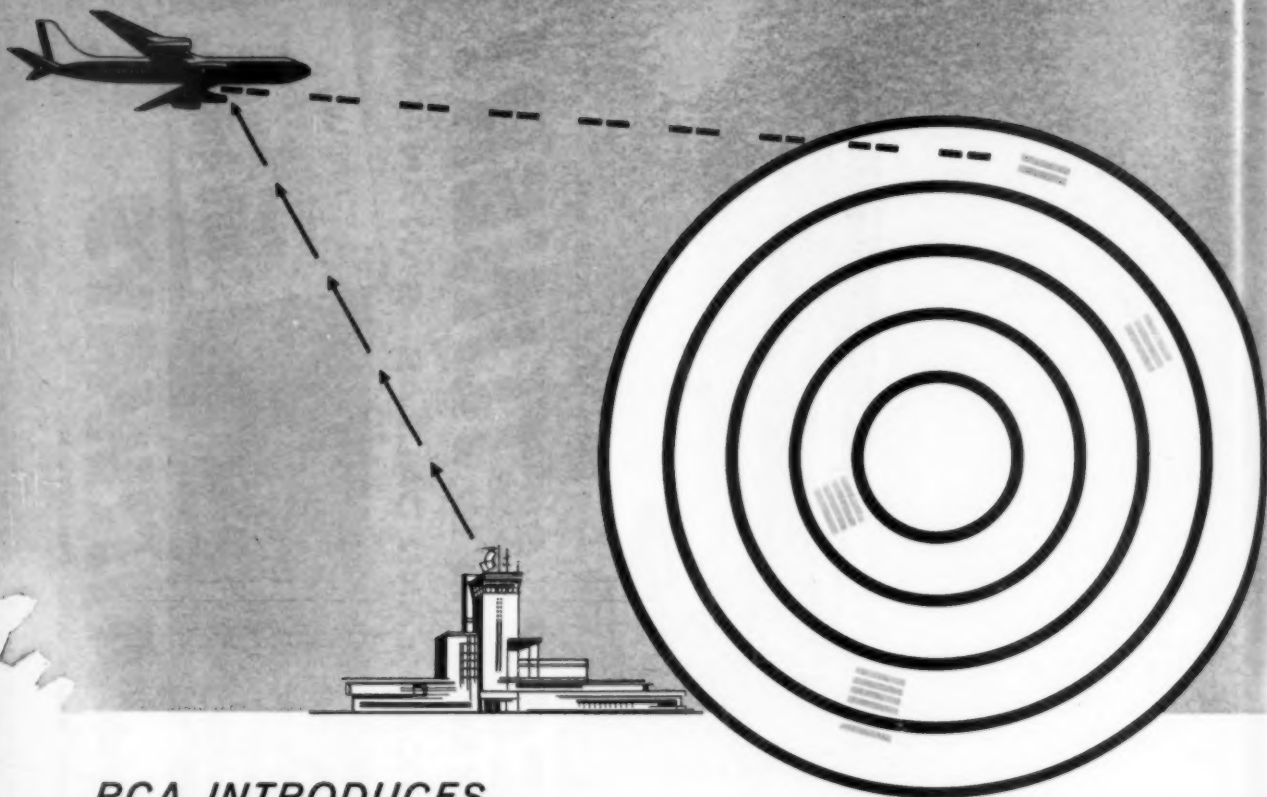


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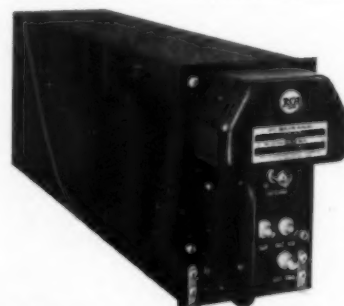
THE ATC TRANSPONDER WITH BUILT-IN "OBsolescence INSURANCE"

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To assure compactness and durability and to minimize the heat dissipation problem, the AVQ-60-B has been designed with transistors where they will serve best. Regulated power supplies provide stability under all environmental conditions. Built-in obsolescence insurance, compactness, efficiency and light weight make the AVQ-60-B Transponder the best equipment-value of its kind in the industry.

Our Sales Engineers will be glad to give you full details on the RCA Transponder in your aircraft. Write or telephone: Radio Corporation of America, Aviation Division, 11819 W. Olympic Blvd., West Los Angeles 64, California.

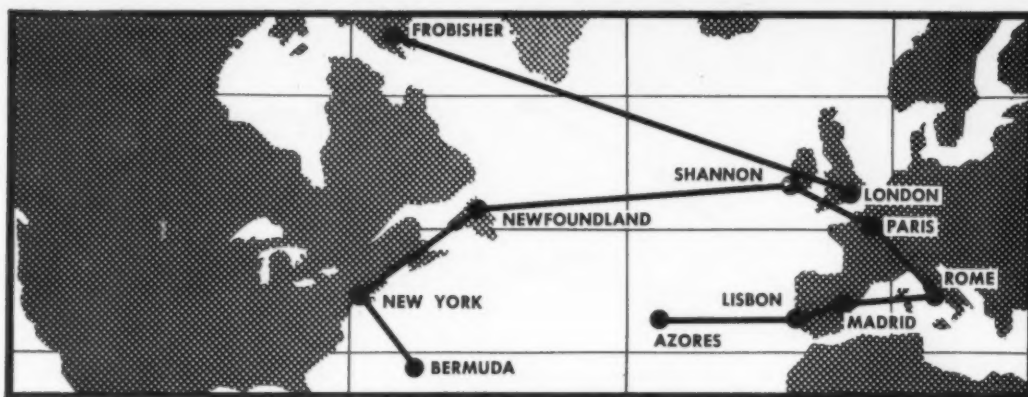


The lightness (only 26 pounds including mounts) and compactness (due to transistors) make the AVQ-60-B applicable to aircraft with rigid space and weight limitations. Sectionalized plug-in chassis construction is used throughout for easy maintenance accessibility.



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Here are the key international routes on which competition between U.S. carriers exists today.

White House Grip Tightens

International route study by United Research may set the stage for Presidential eclipse of CAB

ARE THE INTERNATIONAL ROUTES of U.S. air carriers going to be realigned to eliminate paralleling? The industry is just awakening to the possible (or probable) impact of a new White House study which could have far-reaching effect.

The study itself will have no legal force, but if the White House supports the recommendations, the Civil Aeronautics Board would have no choice but to follow with mandatory orders.

There has been concern in high quarters that American carriers are spending too much effort competing against each other and not enough in representing the nation as a whole in competing with the rest of the world.

The answers won't be long in coming. The White House (which has authorized and is paying for the study) has given the deadline as September 15. This early date was chosen because the President expects to use the recommendations in studying the draft decision of the CAB in the current Pacific area route case, a proceeding which has been expedited for final action by the end of this year.

President directs study

The President contracted with United Research, Inc., to take a careful look at basic policy issues in U.S. international air competition. United Research has been called upon by the government for studies in other areas.

Here are some of the questions which the study will embrace:

- Should the U.S. continue to certificate two or more of its own carriers on major overseas routes?
- Does this same policy of duplicate service apply to foreign airlines?
- Most foreign governments allow only one of their flag airlines to operate each overseas route. Should the U.S. adopt a comparable policy?
- All but a handful of foreign flag carriers are either partly or wholly government owned. How can the U.S.

strengthen the hand of its privately-owned flag airlines so they can compete with this government competition, much of which is subsidized directly or indirectly?

Nothing like the UR study has ever happened before. It indicates that the White House is taking an ever-increasing interest in, and domination over, U.S. air policy overseas. By virtually giving a command to the CAB on route structures and airline designations, it means that U.S. foreign air policy would be executed by White House decree, all but removing the CAB from power. But this is the present trend.

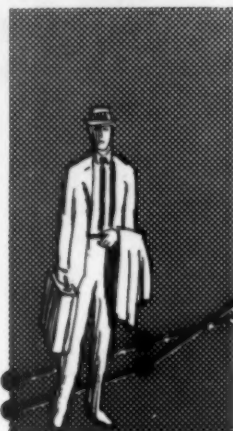
Quesada plays strong role

Both CAB and the Department of State agreed to the study and its purposes, but not without some initial back-firing. It is reported that Elwood Quesada, FAA Administrator, in his dual role as White House aviation advisor, was instrumental in initiating the study.

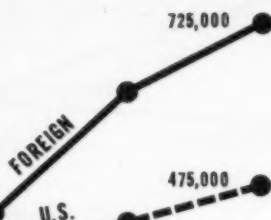
When Congress enacted the Civil Aeronautics Act of 1938, the President was given veto powers over CAB decisions in the foreign field. This passive role was retained for a number of years until some international matters, such as the sale of American Overseas Airlines to Pan American World Airways, got so complex and so controversial, that the White House stepped in to take positive action and direct the CAB to follow a set course of action.

From then on, the White House role in American foreign air policy has been growing stronger. The current UR study is without precedent. If its recommendations should be followed, the CAB will become merely an instrumentality with the White House making the final decisions.

How far things will go is a question—but the impact will be known before too long. If it goes the limit, there could be a major reshuffling of routes for American flag carriers. Certainly the impact will be felt in the Pacific decision due out by December 31.



How the passenger lead changed hands, 1955-59.



Cover Feature

Is U.S. Losing Battle?

During past five years, U.S. market has jumped 106% but world traffic has increased 168%, U.S. airlines

By ERIC BRAMLEY

There's mounting concern in the U.S. over the fight between 13 foreign flag carriers and the two U.S. airlines for U.S.-Europe passengers.

Almost two out of three of these passengers are U.S. citizens. Under their route grants, the foreign lines are carrying not only their own nationals—the primary purpose of such grants—but are successfully eating into the total market at an alarming rate.

CAB has become much tougher in opposing the grant of more rights to these carriers. The White House has launched a study (AIRLIFT, June) into the effect of competition between U.S. lines on international routes and the effect of foreign flag competition on a route with one or more U.S. carriers. The blue-ribbon Atlantic, analyzed here, will figure prominently in the study.

THIS MAY BE THE CRUCIAL YEAR in the transatlantic airline battle.

The two U.S. airlines, steadily losing ground for the past several years, got off to a fast start in 1960's first quarter. But the big question is whether they will improve their position by yearend or continue to get less and less of the market.

What's been happening on the Atlantic—and why—can be seen from an analysis of the last five years:

U.S.-Europe total passenger traffic on scheduled flights in 1959 was 106% over 1955.

The foreign lines' increase in those five years was 168%. Pan American and TWA gained only 53%.

Number of seats for sale by foreign lines jumped 160%. PAA and TWA increased 42%.

Foreign lines in 1955 had 46.2% of the U.S.-Europe market, and increased this slightly to 47.6% in 1956. They topped the 50% mark for the first time in 1957, with 51.6%, and in 1958 took their biggest jump, to 58.5%. Last year, the increase was smaller, to 60.1%.

A look at 1958 gives a clue why 1960 may be crucial. This was the year when the foreign lines caught up in the equipment race. With more DC-7Cs and big Constellations on hand, they piled on the seats for sale—53.3% over 1957—and their traffic increased 40.3%. PAA and TWA upped seats only 15.7% and business rose 6.3%.

The same could happen in 1960. Last year, the foreign lines' penetration slowed somewhat, primarily because of PAA's jets—and would have been even slower had it not been for BOAC's Comets. Two European lines, Sabena and SAS (hampered by a strike) carried fewer passengers than in 1958. Now the larger foreign operators have jets, and they're going full blast. Only El Al, Irish and Iberia are exclusively non-jet (El Al flies Britannia turboprops).

TWA hopes pinned on jets

The U.S. hope in 1960 is that TWA's jet surge will be a big factor in offsetting the foreign increase. TWA, now in the international field in a big way with Boeing 707s, is offering twice as many seats this summer, and expects 1960 to be one of its most profitable years on overseas routes. PAA also continues to add jet capacity.

In 1960's first quarter, TWA increased its seats 59.3% over the same 1959 period, and traffic spurted 71.1%. PAA's capacity was up 19.1% and passengers gained 17.5%. The U.S. share of the market was 47.2%, four big percentage points ahead of last year. Foreign lines increased seats 9.7% and traffic rose 11.7%.

However, in the first quarter PAA and TWA had an equipment lead they no longer enjoy. BOAC had Comets and Qantas operated Boeings. Air France and Sabena started jets in late January. Lufthansa didn't start until late March, and Swissair, SAS and KLM were piston operators for the entire period. Therefore, the rest of the year may be a different story.

Evident from the 1955-59 results is the fact that PAA's continued traffic gains are responsible for the U.S. position being as good as it is. Last year, PAA carried better than one out of four U.S.-Europe passengers. TWA, now making a dramatic comeback, had three top management changes during the five years which affected development plans. In 1958, it was hit by a 16-day strike. Last year, bucking PAA and BOAC jets, it cut capacity 18.2%, traffic fell 9.3% and international operating loss was \$7.2 million.

PAA also offered fewer seats last year, but for a different

Battle of the Atlantic?

year traffic in this blue-ribbon
06% but while foreign airlines
, U. gained only 53%. Here's why

reason. With big Boeings, it operated 29% fewer flights, but capacity fell only 3.5% and traffic increased 20.6%.

Of interest is the fact that the four Air Union members—Air France, Sabena, Lufthansa and Alitalia—carried 254,251 passengers in 1959, or 21.1% of the total. This was only 81,000 short of PAA's 335,587—27.8% of the total.

Why this five-year trend?

1. **Sheer weight of numbers**—12 airlines against two last year (now 13, with addition of Air-India). "Dwindling U.S. flag participation is understandable in these circumstances," CAB said recently. "Any other result would be phenomenal."

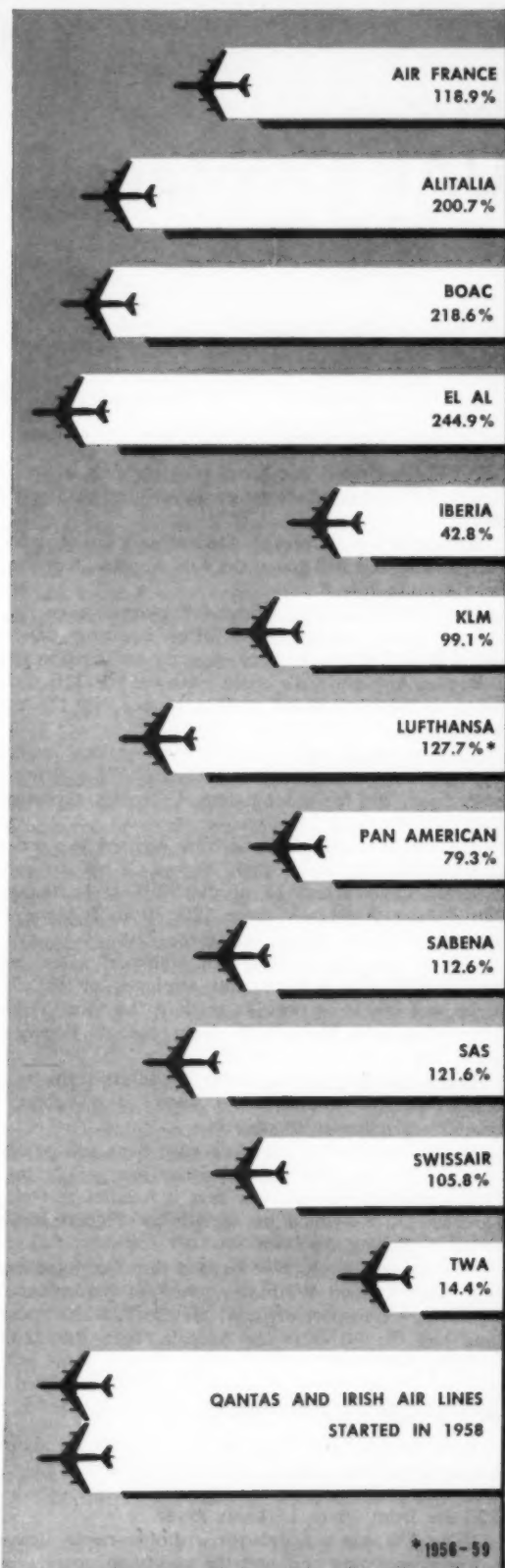
2. **Capacity and frequency.** Foreign lines improved both quality and quantity of merchandise for sale. Last year they offered 1,169,534 seats against 653,087 by PAA and TWA.

3. **The U.S. "give away" of rights.** Not only New York, but Chicago, San Francisco, Los Angeles and other points are tapped by the competition—Air France, BOAC, SAS, Lufthansa, Qantas. Alitalia recently was given rights to the west coast. KLM and Sabena so far have been unsuccessful. The State Department's liberal grants have been the target of bitter criticism and charges that the U.S. is giving far more than it is receiving. CAB, which participates in negotiations, has been tougher and has prevented some grants.

4. **Rights abroad.** Alitalia and Air-India were granted traffic rights at London on their routes to the U.S. Alitalia recently was given rights at Paris on its Atlantic route.

5. **Service.** Foreign lines have successfully sold the idea that their Continental-type passenger service is superior to U.S. service. "It's not beneath the dignity of our employes to serve people," says a foreign official. "They don't all want to be president of the company."

6. **Other factors.** The foreign lines' safety record has been good. Some have had outstanding advertising campaigns. More second-generation Europeans in the U.S. are visiting their home countries, and they favor the home country airline. Easing of currency restrictions has increased travel from Europe to the U.S.—on foreign flag lines.



Foreign carriers led U.S. in passenger growth during past five years, as shown by above percentage increases. Qantas and Irish opened service in 1958, Air-India in 1960. Lufthansa started in mid-1955.

The 720

UAL Christens Boeing's 'Thunderbird'

By WILLIAM J. COUGHLIN

Start of service this month climaxes speedy certification of 203,000 junior-size 707. Boeing has 56 on order, expects to sell 260 more

SEATTLE—United Air Lines puts the first of its 18 new Boeing 720 intermediate range jet airliners into service this month.

Service between Chicago, Denver and Los Angeles starts July 5. The 720 will go on the Los Angeles, San Francisco, Seattle route July 8.

The 720 is making its first airline appearance just seven months from maiden flight after breezing uneventfully through its Federal Aviation Agency certification program.

Boeing Airplane Co's order book for the 720 and turbofan-powered 720B stood at 56 in June, with the company anticipating a solid sales future.

John Yeasting, vice president and general manager of Boeing's transport division, told *AIRLIFT*: "I think we'll be selling 720s for a long time. Customer acceptance has been phenomenal."

In addition to UAL, American Airlines has ordered 25 of the new jets (10 of the 720s which will be retrofitted with fan engines and 15 of the 720Bs); Lufthansa, four 720Bs; Irish Air Lines, three 720s; Braniff Airways, three 720Bs; and Western Airlines, three 720s.

George Sanborn, director of transport sales, estimates Boeing will sell another 400 airplanes of the 707/720 series, not including possible sales of the short-range 727.

Of these 400 aircraft, Sanborn expects Boeing to sell about two 720s for every 707.

The swift new medium-range jet differs from its heavier big brothers in a number of ways: it is lighter, faster, shorter and cheaper to operate.

Thanks to additional leading edge flaps and other design changes, its handling characteristics are greatly improved. One United Air Lines pilot says it handles as well as the Douglas DC-8—which he regards as a great compliment although Boeing may not.

"It's the best aircraft we have in terms of handling qualities," says Donald W. Finlay, chief of preliminary design at Boeing's transport division. "If the 707-120 is our Fairlane and the 707-320 our Lincoln, then the 720 is our Thunderbird."

At the right time, it's slower

Landing and takeoff speeds for the 720 are about seven knots lower than the 707-120 at the same weight. At its own operating weights, landing and takeoff speeds of the 720 are from 10 to 15 knots lower.

"The 720 was a search for a shorter-range aircraft with a lower operating cost and the ability to operate into and out of shorter fields," Finlay says. "That's what we got."

Convair's success with the 880 was the spark which firmed up Boeing's decision to enter the medium-range jet field. While Boeing and Douglas were concentrating on

the field of big jets, Convair went after the market with its smaller 880 and 600 series.

"The sale of the 880 to TWA crystallized our decision here," says a Boeing official. "It was either go ahead with the 720 or risk losing the domestic operators to Convair."

The new jet got its "Seven-twenty" designation after United Air Lines placed the first order. President William Patterson, with a large investment in DC-8s, didn't want his new aircraft tagged as a 707, which his competitors already were flying.

Weight was reduced substantially. The 720's maximum gross weight of 203,000 lbs. compares with 248,000 lbs. for the 707-120 and 296,000 lbs. for the 707-320. Maximum landing weight is 165,000 lbs. against 175,000 lbs. and 195,000 lbs. for the larger aircraft.

The body was shortened, designed for 110 first-class passengers against 121 and 131 in the 707 series. Length was cut to 128.8 ft., ten feet shorter than the 707-120 and nearly 17 feet shorter than the big 707-420. Although wing span and area remain the same, the difference in size is immediately evident when you see the 720 on an airport.

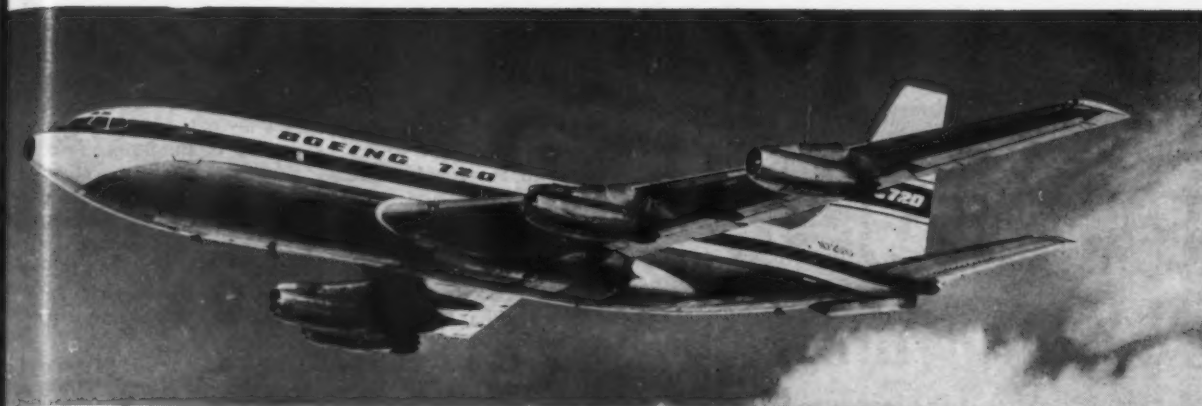
Basic fuel capacity was reduced to 10,092 U.S. gals. against 13,478 gals. in the domestic 707s and 21,200 gals. in the overseas series.

To improve lift at low speeds, additional leading edge flaps were introduced. The 707 only has these flaps inboard of the outboard engine. The 720 has them both inboard and outboard.



Close look at 720's ventral fin. Heavy rubber strip along bottom serves as a tail skid.

United Air Lines photo



Boeing Airplane Co photo

New wing glove visible at root improves critical Mach number, hikes cruise from Mach 0.88 to 0.90.

A glove was added at the wing root to improve the critical Mach number by increasing sweep. Maximum cruise is up from Mach .88 to Mach .90.

Other, minor changes can be seen when you walk around a 720. There is no ram air scoop on the outboard engines for the turbo compressors, only on the inboard. Engine silencers have been modified from 21 tubes to nine.

Boeing claims its new aircraft, while flying longer ranges, can go into shorter fields than the French Caravelle. It is betting the 720 will be a better money-maker than the Convair 880.

Although conceding that the 720 is slightly more expensive than the competition, Sanborn believes this is offset by a number of features, including increased utilization resulting from the background of 707 experience as well as the advantage of common maintenance and spares for airlines already operating 707s.

"Initial cost while important," he points out, "is not as important as other factors such as reliability and operating costs."

More expensive, yet cheaper

Boeing concedes a 3-cent an airplane-mile advantage to the 880 on direct operating costs. But it believes that by cranking in other factors, the 720 has a positive advantage of between 8 and 10-cents a mile on seat-mile costs. By carrying more seats, it offers a greater profit potential, Boeing asserts.

Sanborn points out that a 720 will earn more money with six-abreast seating and tourist fares than with four-abreast and first class fares.

"This is not true when you go from four-abreast first class to five-abreast tourist," he says. Boeing also believes that the ability to go to six-abreast seating is important because of the trend to tourist and coach with the advent of jet speeds.

Boeing's price tag for the 720 is about \$4-million against \$5-million for the 707-120 and \$5¼-million for the 707-320 and 420 series. Price of the 720B is about \$4½-million.

Three 720s were used simultaneously in the FAA certification tests. Prior to these tests, all three were used in Boeing's performance testing. Total test time is estimated at well over 440 flight hours.

The FAA certification program was relatively trouble-free. Dive testing to Mach .96 turned up no flutter problems. Some unexpected air-conditioning difficulties arose due to changes in body length and speed but these have been ironed out.

There were some difficulties in tailoring the controls at first. Tailoring the elevator balances gave about four times as much trouble as on the 707-120.

Flight test also proved out the good handling qualities of

the 720 engines, according to the Boeing designers. The 720 is equipped with Pratt & Whitney JT3C-7 turbo jets which play a big role in its higher cruise altitude, faster climb and shorter takeoff field length.

These are, in effect, de-militarized J-57s rated at 12,000 lbs. of thrust each. Fighter capabilities have been removed and weight reduced about 700 lbs. There will be no water injection required on the 720.

The JT3C-12, expected to be the last in the P & W series, will enable the 720 to go to a gross takeoff weight of 225,000 lbs.—which Boeing jokingly refers to as its "Inter-continental 720."

The 720B will be powered by Pratt & Whitney JT3D-1 turbofans. These are rated at approximately 17,000 lbs. dry takeoff thrust, which will enable the 720B to get into and out of airports where runways are too short even for the 720. The D-3 engine will be rated at 18,000 lbs. takeoff thrust with about 10 percent more cruise thrust.

In design of the 720, Boeing and Pratt & Whitney engineers devoted considerable study to the 707 with the idea of improving accessibility to items needing the most servicing.

As a result, maintenance time for these items on the JT3C-7 has been cut to less than half of the time required on the C-6. An added bonus was a reduction in nacelle diameter.

Special efforts also were made to reduce the frontal area of the fan engine installation on the 720B. Boeing reports that the 720B installation will have a frontal area 37 percent less than that of the DC-8 with the same engine and 35 percent less than the Convair 600 with the aft fan engine.

Familiarity breeds reliability

Boeing has pushed a vigorous reliability program on the 720. Sanborn points out that due to the company's big jet experience with the B-47 and B-52, the 707-120 achieved a high degree of reliability early on. The curve for the 707-320 started above this and the 720 is expected to follow the same pattern, with even further improvement coming from refinement design.

"The airline getting 720s gets a fleet of proven airplanes," says Sanborn.

This seems to be backed up by United's early experience. Before certification, United at times was achieving a 10-hr. a day utilization during crew training in San Francisco.

The 720 which United is introducing into service this month has a cruising speed of 575 to 615 mph, a cruising altitude between 15,000 and 40,000 ft., a range up to 3,300 mi. It will carry 47 first class passengers and 59 tourist class. There is a cargo capacity of 1,235 cu. ft.

Boeing thinks you'll be seeing a lot more like them.

Fairchild

Tailors Big F-27

To Suit Trunks

Proposed "E" Model will gross 42,000 pounds, has 88-inch longer fuselage and seats up to 52

AT LEAST TWO BIG trunk airlines are taking a very close look at a stretched version of the Fairchild F-27. It's the F-27E and it represents Fairchild's answer in the 150-250 mile category, the short side of the short/medium haul operation.

Priced at \$1.2 million complete with all electronic gear, it is being offered for delivery in the first half of 1962. First flight is targeted for mid '61, certification in the fall and start of service by the first customer before the year runs out.

The "E" boasts an 88.6 in. longer fuselage and the most powerful of Rolls-Royce Dart turboprops, the RDa10/1. It will gross 42,000 lbs., a healthy 6,500 lbs. higher than the present F-27A, although Fairchild is now working on a 1,000 lb. increase that will bring the "A" to 38,500 lbs.

Changes to the basic F-27 structure are few. A 53.2 in. fuselage barrel section is added forward of the present front window and a 35.4 in. section aft of the present rear window. The landing gear is shifted aft 20 in. to maintain the same tail approach angle as with the shorter fuselage. A five-degree dihedral is added to the wing shortening the span by 2 2/3 in.

The new model is an expansion of Fairchild's stable of

F-27s, not a replacement for earlier models developed for local airlines. However, on those routes where locals have demand for higher seating capacity, the "E" would permit an increase up to 52 seats. The top is now 44.

For trunk services, the "E" will seat 44 passengers in eleven rows, four abreast. A portion of the longer fuselage is used to provide increased cargo cubage, more carry-on luggage space and buffet provisions for those trunks who want them. Forty-eight passengers *could* be accommodated, but trunks have shown no interest in this number.

The new model is being offered with two engine ratings, 2,750 shaft horsepower wet and 2,400 dry. Deletion of water methanol saves only 168 pounds but makes a marked difference in hot-day performance.

The wet version faces no restrictions at sea level airports, has to hit a torrid 116°F before it is restricted at 1,500 ft. airports. At 5,000 ft., payload isn't affected below 67°F.

For the dry version, at sea level, restrictions commence above 91°F. Unrestricted temperature ceilings at 1,500 ft. and 5,000 ft. are 79° and 43°F, respectively.

Takeoff field length at ICAO standard atmosphere remains below 4,500 ft. wet or dry for both sea level and 1,500 ft. airports. At 5,000 ft. altitude airports it jumps to 6,250 ft. wet and 6,750 ft. dry, all for full gross takeoff.

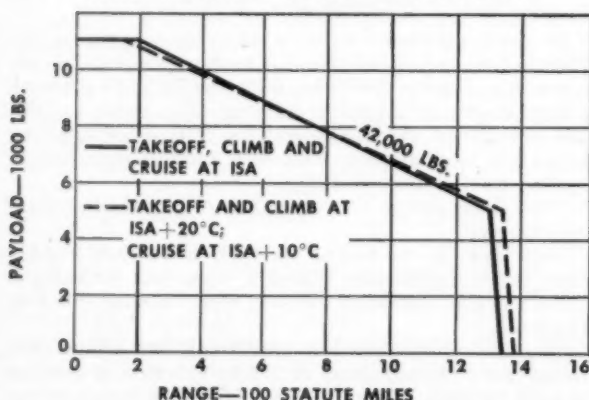
Block speed for standard day operation at 200-mile stage distance would be about 243 mph, falling off to about 237 mph for ISA plus 10°C.

Fairchild estimates seat mile costs at 3¢ for the very short 50-mile segment, dipping below 2.3¢ for 150 miles and below 2.1¢ for 250 miles. These are based on 44 passengers using the 1955 ATA formula and are considered higher than those computed using more accurate trunk experience factors.

Figuring total operating costs at double the direct cost, the F-27E works out to about 4.3¢ at 200-mile segments and would require a 63% load factor to break even. At 250 miles, total cost is below 4.2¢ and break even load factor drops to 62%.

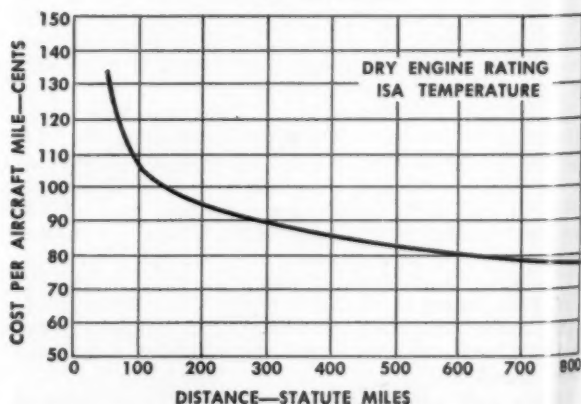
If Fairchild is successful in nailing down a trunk order, it would work wonders for the Hagerstown, Md. transport builder. One trunk order no doubt would attract others. And a continuing production line would enhance the prospects of additional follow-on orders from the locals. Finally, a healthy order would boost Fairchild beyond the break even point on its overall F-27 program, the best sign that any present operator or future customer could ask for as a guarantee of long-term manufacturing support.

**PAYLOAD VS RANGE
WITH WATER METHANOL PROVISIONS**



Payload of F-27E holds at 11,000 lbs. for 200 miles, remains above 10,000 in 150-250 mile ranges for which it is being proposed.

**DIRECT OPERATING COST PER AIRCRAFT MILE
ATA METHOD**



Direct cost per aircraft mile for nominal 200-mile segment is estimated at 95¢ based on 1955 ATA formula, according to Fairchild.

800
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LIFT

Have We Abandoned



YOUR EDITORIAL IS TIMELY and I hope that your effort will continue. We gained world leadership in aviation by diligent attention to aeronautical research and we cannot hold our position unless its requirements are high on the calendar—and they are not now.

C. R. Smith
President, American Airlines

I AM IN COMPLETE AGREEMENT with Mr. Parrish's thinking as expressed in his editorial, "Have We Abandoned Aeronautics for Space?"

J. D. Wright
Chairman of the Board
Thompson Ramo Wooldridge, Inc.

I CAN FIND LITTLE TO DISAGREE with in the sound "Personal View" expressed by Mr. Parrish in answer to his own query "Have We Abandoned Aeronautics for Space?" I would like to point out that the Cornell transonic wind tunnel has experienced a substantial decrease in activity, while the Cal-Tech tunnel has been firmly closed down and I understand it is in the process of disassembly.

This greatly decreased work load affects many other facilities and only a national review of tunnel activities will give a true picture of the situation.

The rapidity of the change is alarming. Two years ago tunnels throughout the country were working under forced draft. Now we find unneeded capacity. There has not been a proportionate change in need, just a tremendous shift in emphasis. With typical American enthusiasm the pendulum



AERONAUTICS for SPACE?

We asked this question editorially in the June issue of AIRLIFT. And then we asked some of the key management and engineering people in industry and government the same question. Their response, their suggestions and ideas were not only gratifying but worthy of serious consideration by our aviation and space planners. What's the cure? Education and enlightenment, says one. Here AIRLIFT publishes their comments in full as a step in that direction.

Smith: "We cannot hold our position unless its requirements are high on the calendar . . ."



SMITH

Littlewood: "The rapidity of the change is alarming."



LITTLEWOOD

Wright: "I am in complete agreement."



WRIGHT

has swung from one extreme to the other.

I would like to correct one statement attributed to me in Mr. Parrish's comments, which apparently has been misunderstood. In none of my public expressions have I intended to convey the idea that modern airplanes of today, or, more particularly, of tomorrow, are not excellent vehicles representing advanced, if not optimum, stages of development. On the other hand, our experience indicates that we are far from through with development of such aircraft.

I have made the statement, and would repeat it, that if we include in our modern jets the already established engine and aerodynamic benefits, we will have airplanes which in the present state of the art could not be improved 10% by complete re-design.

In other words, we either have put to use, or will within the next couple of years, most of the technical advances available at this state of the art. To go further—and it is possible to go much further—we must intensify research and development in all areas so that five years from now we will be able to design airplanes to obsolete current models.

We are far from fully understanding materials, structures, power plant cycles and thrust, fuel efficiencies, high lift devices, aerodynamic efficiency, control improvements, instrumentation, accessories, etc. If we do not work intensively at these things, we will find ourselves still unable to design a better airplane five or more years from now. This, I think, is a major problem and indicates a nationally critical situation.

Mr. Parrish's "Personal View" did not list the unsolved technical problems of supersonic development and operation, particularly suitable to air transport. The subject has been comprehensively covered before, but the facts are never referred to when important decisions are considered as to whether or not to proceed on a supersonic jet transport.

No one would deny that we will some day have supersonic operation. In a military sense this must be as soon as possible, even if uncertain and risky. On the other hand, it seems foolhardy to undertake specific air transport development until more of the major technical problems in this field are worked out by the military.

I have no comment about the cargo airplane problem but must express the same doubt as Mr. Parrish over whether there has been a reasonable analysis of the task.

Mr. Parrish ends his comment with the \$64 question, "Who has the solution?" I know no cure other than education and enlightenment, and Mr. Parrish's query is a step in that direction.

William Littlewood
Vice President, American Airlines

CONGRATULATIONS TO AIRLIFT and Wayne Parrish! In the editorial in your June edition I found at long last an articulate and discerning voice which cuts through fog and confusion and brings the issue of missiles (space or otherwise) and manned aircraft into focus.

Speaking for myself and The Garrett Corporation, we agree that the missile/space race is of the utmost importance. We expect to do our share in seeing to it that the free world wins that race. But we deplore the shortsightedness of those of our national policy makers who, apparently, have concluded that this is all the United States need do to survive.

We would like to believe that ten years from now the United States will have survived and retained its prosperous position as a leader or participant in the design of Mach 3 air transports. If, in ten years, we have all the missiles, rockets, space ships, etc., necessary but have failed to keep abreast of other nations in the peaceful needs of aviation, surely we will have allowed ourselves to deteriorate into a

secondary world power in the very type of world which we have sacrificed so much to preserve. In other words, we will have lost the cold war!

The fact that we are drifting in this direction gives me goose pimples whenever I think about it. The indisputable facts cited in Wayne Parrish's editorial should convince any doubters among aviation's knowledgeable leaders that they are playing with a stacked deck of cards.

The fact is that the U.S. government in 1960 has no clear policy with respect to continuous development of commercial aviation. It assumes our leadership can be automatically sustained by the captains of the aircraft industry without planned help from the government. If pressed, congress would probably argue, "We have helped the aircraft industry from diapers to adulthood and this is enough. Survival now depends on closing the rocket, missile, and space gaps. We must do this but we can do no more."

The real truth is that the United States government has virtually abandoned its interest in aeronautical development on the theory that it is no longer its baby and that industry can cope with the problem of foreign competition. As a matter of fact, during the last ten years the aircraft industry has been singled out by congress as its favorite



WOLFE

Wolfe: "At long last, an articulate and discerning voice . . ."

Dryden: "There are many missions in which the presence of man is advantageous . . ."

Douglas: "We are nearing a point where the total aerospace effort . . . might be reassessed . . ."

whipping boy. There has been a campaign to whittle away at all incentives for industry growth and prosperity. This campaign is particularly active at the present time.

History repeats itself. As an old timer, I have often witnessed the tragic consequences of indifference and neglect. Here is history. Not a single American-built airplane or engine was completed in time to fight in World War I. National indifference set in immediately after the war. The government not only failed to supply incentives for industry, but instead engaged in active competition with it, (i.e., the Naval aircraft factory in Philadelphia).

As a result, world records were held by the French, British, Italians, and even the de-militarized Germans. The fact that we had drifted into a fifth-rate air power finally stirred the national conscience and jarred Calvin Coolidge into setting up the Morrow Board to hold hearings and investigate the causes of this disgrace.

In 1925 the Morrow Report was presented and contained the following:

"Anything that strengthens the industry as a whole and especially anything that conduces to the strengthening of the design and engineering department: of the companies building aircraft must be considered as a contribution to National defense."

As a result of the Morrow Board's study and recommendations, Congress passed the Army and Navy Procurement Act (July 2, 1926), which brought about a definite improvement for a while, but by 1935 the ravages of the depression had the aircraft industry again drifting toward

AIRLIFT

the rocks. This time President Roosevelt set up the Federal Commission to investigate and make recommendations.

Once more the industry experienced government support, and providentially, as war clouds were just beyond the horizon. This time, at least, we were partially prepared.

Immediately after World War II, the aircraft industry was again cut loose and allowed to drift. This time it was President Truman who set up the Air Policy Commission (July 19, 1947) with Mr. Thomas K. Finletter as chairman. This resulted in the Finletter Report of 1948, otherwise known as "Survival in the Air Age," which was largely responsible for a five-year aircraft production and maintenance plan.

Since then we have had the Korean incident and the "Sputnik," the former providing an impetus for aviation and the latter providing an impetus in a different direction. In 1960 the aircraft industry is again drifting and beset by troubles beyond its control.

Wayne Parrish is correct when he says "the spring is drying up." We believe the time has come for President Eisenhower to appoint an Air Policy Commission.

K. B. Wolfe
Executive Vice President
The Garrett Corp.



DRYDEN



DOUGLAS

I THINK THAT THE PROBLEM which Wayne Parrish describes in his editorial is one that should be studied very carefully. First, with reference to military aircraft, I am glad to see a re-examination of the decision to interrupt the development of the B-70 airplane. Although I have no competence in military matters, I believe that high-performance military aircraft will find extensive application for many years to come. I believe that there are many missions in which the presence of man is advantageous.

With reference to civil aircraft, it is quite clear that there is much research and development to be done in the field of the supersonic transport and also at the other end of the speed range in vertical take-off and landing aircraft or short take-off and landing aircraft.

The national policy decisions which have led to the absence of advanced airplane requirements for the military services have created difficult problems for the aeronautical research and development agencies of the nation, including governmental, university, and industrial organizations.

As Mr. Parrish mentions, the National Advisory Committee for Aeronautics was absorbed into the National Aeronautics and Space Administration, and the funds made available for the new agency are now estimated at a level for the next fiscal year which is nine times the funds which were available to the NACA. This large increase in financial support accompanies new responsibilities for the development of hardware for space research.

The amounts available to the former NACA Research Centers have increased about 50 percent. It is my best esti-

mate that the amount of money now going into aeronautical research is of the order of thirty million dollars or roughly about one-half of that which went into aeronautical research a few years ago. It will be very difficult to substantially increase this amount unless the military services undertake the development of new types of aircraft.

Hugh L. Dryden
Deputy Administrator, NASA

WAYNE PARRISH'S EDITORIAL in the June issue asks a stimulating question which merits serious consideration by the nation's best minds.

Few, certainly, will advocate diminution of programs directed toward the conquest of space. Specific objectives have emerged from earlier efforts which, because of haste, may have been somewhat scatter-shot. Our money, brains and energy are being directed, in the main, into channels which promise the greatest civil and military rewards.

So, in terms of national posture and the time in history, the emphasis on missile and space activity does not seem to be excessive.

However, we may be nearing a point where the total aerospace effort, including aeronautics, might be re-assessed and re-evaluated in terms of long-term goals.

We know there is no lack of interest in new and improved manned aircraft within the three military services. I can state that our own organization has not decreased its interest or development effort in logistic or other forms of aircraft for both military and civil application.

To move forward, nationally, requires a definition of goals and initiation of action. At any given time, the air transport industry, for instance, is concerned with three basics: improvement, expansion and development. From both technical and economic aspects, these elements must logically follow one another.

Improvement of great magnitude is represented by current commercial jet airliners, an improvement made possible by prior military development of engines and high speed combat aircraft.

In the period from 1955 to 1960, there has been an expansion of jet transport performance capabilities by state-of-the-art advancement in performance economics and reliability and by broadening of available types to meet the needs of a complete air transport system.

Looking forward to development, it is logical to assume that the expanding series of subsonic jet transports will be followed by a similar pattern of supersonic carriers. To make this possible at an economically logical time, it is important that reasonable funding be established within the next year or two for study and development within the NASA, the FAA and members of both the airline and airframe industry who have the experience and the facilities to make meaningful contributions.

From past experience, it would appear obvious that while military technical and operational progress is a necessary prerequisite, a civil supersonic transport will require substantial development in areas unique to public and logistic transportation.

Donald W. Douglas, Jr.
President, Douglas Aircraft

WELL IT'S ABOUT TIME—time somebody woke up enough to wind the alarm clock to wake up the rest.

It is, of course, pleasant to dream and exciting to make strides in the glamorous experiments in rockets and space, but day-to-day things must go on, and should improve. It will be a long while before any considerable segment of the public would be willing to submit to, or could afford



McKAUGHAN

McKaughan: "It's about time somebody woke up . . ."



HORNER

Horner: "A second best position in this field is not good enough . . ."



HIBBARD

Hibbard: "We have virtually abandoned aeronautics . . . just at the beginning of an enormous new era . . ."

paying for, being shot to their destinations via rocket.

Only now has a small percent of established business begun to use air cargo. Yet, there is a tremendous area of saving and efficiency wrapped up in this single needed development—to say nothing of the real improvement which could come through the proper design of an efficient, reliable, shorthaul airplane.

Except for external sheet metal work, automobiles are essentially the same as they were several years ago—with, of course, some improved mechanical and engineering aspects. They still sell, service and use a considerable number of automobiles.

You, and the industry, must not let the glamorous appeal of space and rockets create a protracted or permanent gap in the continued development of air transportation, its vehicles, and related equipment.

R. E. McKaughan
President, Trans-Texas Airways

MISSILE/SPACE RESEARCH and development requires a powerful national effort. As with manned flight, a second best position in this field is not good enough. Somehow, though, we must correct the growing drift we have entered in slighting manned aircraft research and development. We have made only a small start in realizing the potential of manned aircraft.

I do differ with the editorial's view, however, on several specific points. Parrish states, for instance, that industry research and development in aeronautics has declined across the board from major airframe builders to manufacturers of engines and other components, and then he goes on to say that in some cases such activities have all but ceased.

The work many airframe companies undertook in order

to provide turbine-powered transports, both passenger and cargo types, continues, to my knowledge, as a private activity of considerable dimensions. A number of companies have full teams of designers and engineers at work without any outside support on projects for the future.

I can be even more specific in the engine field. Pratt & Whitney Aircraft has not decreased its research and development of engines. In fact, our total effort has increased over that of four or five years ago. But unless additional support is forthcoming, and soon, we will have to cut back.

Still another specific example is in the important field of environmental control systems for high Mach number manned aircraft. Here our Hamilton Standard division is hard at work. Both in specific projects and in the broad realm of advancing the state of the art, these activities are aimed at further development of manned aircraft for the immediate present and the future.

I think also that the Parrish editorial infers that there are no military needs for aircraft in the future except for cargo and utility uses. My views are completely to the contrary. I am convinced that for limited war purposes, and possibly even in the event of a great, all-out war, manned aircraft, carried to their highest state of development, will be indispensable. This is particularly so of tactical aircraft for all the military services.

Missiles just can't do everything. It is equally true of the turbine-powered helicopter with its versatility that far exceeds the role of utility aircraft. Therefore, coming back to Parrish's main argument, I certainly agree that it is imperative for us to start new designs of manned aircraft at once. Otherwise, we will find ourselves with manned flight equipment that is not just obsolescent, but wholly obsolete.

H. M. Horner
Chairman, United Aircraft Corp.

I AM INDEED IN AGREEMENT with Wayne that we have virtually abandoned aeronautics for space. We have done so just at the beginning of an enormous new era for the manned airplane. We are likely to think that air transportation has matured, and yet I am convinced it is in its infancy and that great strides will be made not only in the short-haul but later in the supersonic long-haul market.

Air cargo is just beginning to achieve importance. For the lack of a superior cargo airplane, operators have been reworking old piston-engined planes for this purpose. So there is a crying need for not one but several new air cargo carriers, as stated by the editorial.

The other new area of broad development which should quicken in the not too distant future is private owner aircraft manufacture. We are just now beginning to learn how to do VTOL, but there again is definite need for development and research work. This is going to be the biggest field of all and we haven't even made a serious effort toward this tremendous potential.

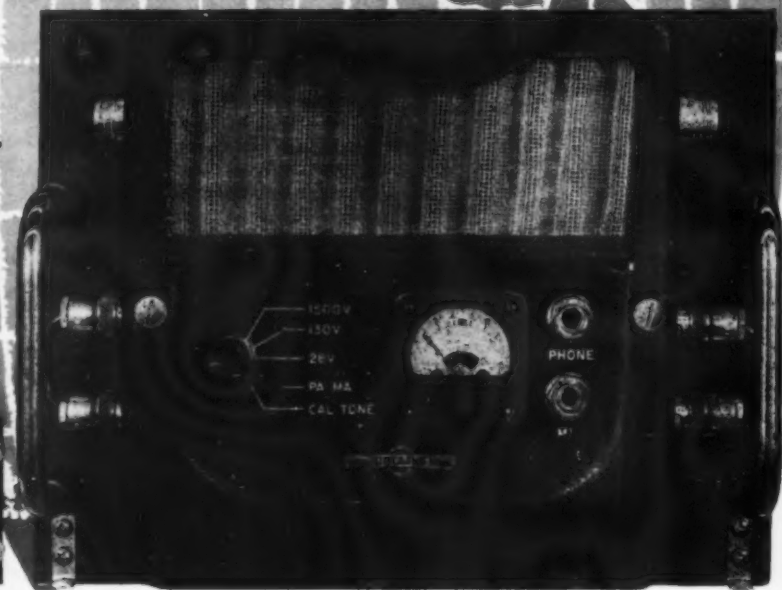
My hat's off to Parrish. I hope that with editorials such as this we can swing the pendulum back so that the manned airplane is not neglected but instead takes its proper place in the over-all planning.

Hall L. Hibbard
Senior Vice President
Lockheed Aircraft Corp.

These are the views of a few, but an important few, leaders in aviation. You no doubt have ideas of your own, perhaps comments on what they have to say. *AIRLIFT* feels that the issue is too important, the stakes are too high, to let rest. We would welcome your views, too, in the search for an answer that will keep the U.S. first and foremost, both in aeronautics and space.

LONG RANGE DEPENDABILITY ON 28,000 CHANNELS

*Collins 618T
HF SSB
Transceiver*



Constant communication control of air fleets anywhere in the world, formerly possible only in military applications, is now available for all commercial aircraft with long range communication requirements.

The Collins design teams that developed global communication for the U.S. Air Force, Navy, and Marines are now introducing the 28,000 channel 618T HF SSB Transceiver to meet the increasing commercial aircraft need for reliability in extended range air-to-ground communication. Covering the entire 2-30 megacycle band, the 618T offers both AM and SSB performance. Simplified one-control operation selects any one of the 28,000 automatically tuned channels. Complete compatibility with existing military and commercial ground stations, both AM and SSB, is available for emergencies or

for military mobilization. The 618T monitors Selective Calling frequencies in all three modes at all times.

A technique pioneered by Collins, single sideband provides dependable long distance communication that gives you twice the talking power of existing systems on only half the frequency bandwidth because all the output power is concentrated in less than half the frequency wave. The result is a powerful, long range low distortion signal, despite poor atmospheric conditions. Extended frequency stability enables 100 word per minute teleprinting transcription anywhere in the world as accessory and ground facilities for these services are developed.

The 618T is transistorized, completely modularized, including power supply. It's lighter, smaller — 1 ATR case size.

The ground complement of the 618T can be selected from any of Collins SSB communication systems — from 500 watts to 45 kw, depending on range requirements.

FEATURES

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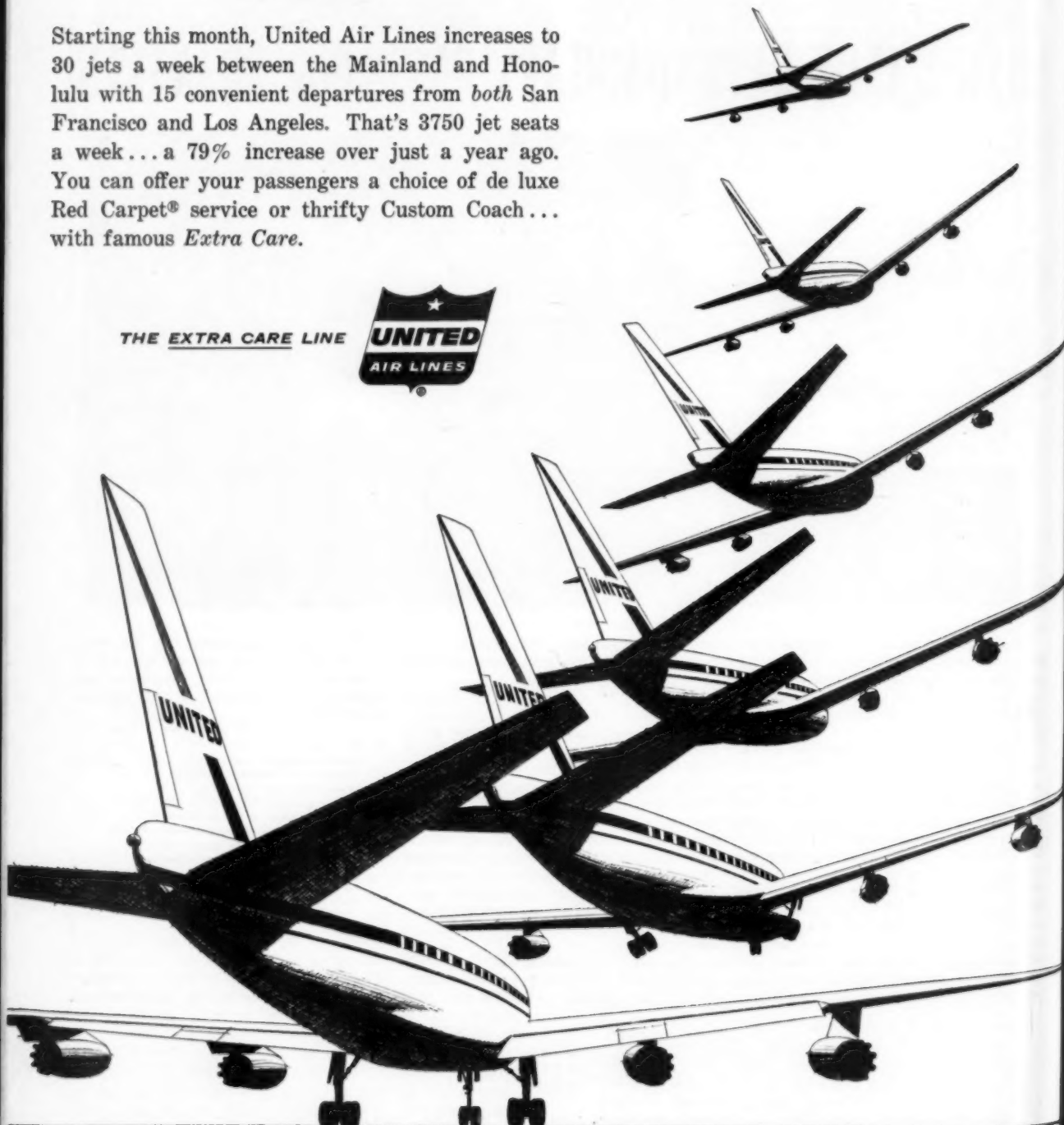


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JULY

Success in business means the right people in the right jobs. That's why this warning to management:

Don't Sell 'PERSONNEL' Down the River!

By PAUL W. KAYSER*

CONTROL OF THE PAYROLL—the task of guaranteeing an equitable return for a company's annual payroll investment—will be one of the most formidable hurdles facing airline management in the years ahead.

Payroll is the largest single expense in running an airline today. To tackle its disposition efficiently, management must be compelled to devote more time and attention to the personnel function.

Fundamental to the problem are these two factors:

1 Amid a continuing rise in operating costs over recent years, payroll has shown an even more drastic upward spiral. Five years ago domestic trunks laid out \$404,586,000 for payroll and related expenses. Last year the figure was \$734,540,000. Indications are the trend will continue.

2 A study of 4,456 U.S. labor union contracts in 1959 revealed a nationwide average pay increase of 9.1¢ an hour. But the average pay boost reported by 13 airlines was 15.5¢ an hour!

How does management react to this build-up of "payroll pressure"? Some airlines have emphasized personnel by electing vice presidents for personnel or industrial relations. But this acceptance is not yet universal.

On the contrary, personnel emphasis remains principally on labor relations and negotiation. Inadequate consideration is given the important and closely interrelated function of personnel relations administration.

Personnel people called upon to recommend big expenditures in a labor negotiation often must base their recommendations solely upon pressures of the moment and not upon intimate knowledge of the plans, philosophies and problems which lead to management decisions.

When refused participation in such top level decisions, they are forced to work in a vacuum. Under these conditions, is it any wonder that so many of our labor negotiations lead us into trouble?

The personnel function in our industry remains dimly defined and poorly understood. The administration of human beings can never be reduced to an exact science, but an analytical, professional approach can often achieve remarkable results.

Skillful personnel management is essential to airline leadership. The personnel department can lend confidence to any effort to control payroll costs by substituting research and analysis for pressures of expediency.

Beware the labor relations "battlefield"

A "battlefield" concept, where the labor relations planner is constantly in the front lines, cannot be tolerated. We must be more imaginative. We need to be able to equate labor decisions with the long-term implications they can have on company success.

This cannot occur where labor relations staffs are so inadequately manned that the mere handling of day-to-day problems provides little opportunity for original thinking. The "battlefield" approach has resulted in acceptance of concepts which can hurt us seriously.

Those big 1959 airline pay increases point up one vital area where a new approach must be applied. Airlines can only raise the price of their product through the tedious, lengthy process of securing government sanction. They can ill afford outsized settlements without return. Measures of productivity must be found which can be tied to proposed wage increases.

Ways must be found to get the employee and his union to recognize that it's the productivity of capital, invested in improved aircraft, which has made possible our industry's progress. The employee can ask an increased share of the gains only if he, in turn, will produce more himself.

Don't neglect manpower selection

The company which does not expend time and effort to improve its selection methods will make a grave mistake.

Industry in general—ours is no exception—has often made haphazard decisions on individuals picked for management positions. Facing keener competition, business survivors will do so because they have more right people in right jobs.

There is a marked distinction between *employment* and *selection*. Too often, managements go on making the same mistakes in placement, without regard for the analytical opinions of their personnel people. This hurts fine individuals, demoralizes the company and limits its potential.

There must also be a sensible plan to improve management skills and provide a continuing source of new management material. Part of the answer is in the willingness of competent senior executives to counsel those in less responsible jobs.

Job evaluation is vital

Greater attention must be given to all the problems of compensation.

Some companies use job evaluation to set the relationship



* Paul W. Kayser has had a varied career in personnel relations. He left a post as director of industrial relations for P. Lorillard Co. in 1955 for his present position—v.p.-personnel at American Airlines.

between jobs of various degrees of complexity where employees are non-union, and where such procedures will help determine an equitable distribution of salary. Other companies don't. The result is employee unhappiness, poor morale, and inability to attract and hold the kind of people needed today.

Why is job evaluation neglected? The usual excuse is that the company can't afford the necessary staff. My feeling is that most companies can no longer afford *not* to employ the staff. A 1% reduction in employee turnover might more than pay for the people needed.

What about management?

Our industry could well face a severe shortage of top management talent within the next decade.

Unlike most other industries, most of us have failed to give capable management people those considerations, over and beyond salary, which provide them an opportunity to establish an estate.

Airline employment in a management capacity offers, particularly to younger men, a broader base of experience than is offered in many businesses. The contradictory nature of these two statements indicates the root of the problem. Older businesses need capable young managers. Experienced younger men from our industry may be attracted away when we most need them.

In talking to each other, personnel people tend to be too pragmatic and optimistic about their corporate status. But acceptance is not universal throughout our industry.

I believe it is inevitable. With it will come direct participation in management decisions which will permit personnel to contribute fully to the progress of our industry. Under severe "payroll pressure," it *can* come rapidly.

But acceptance will come only when we educate employees to the company's problems and recognize that labor success must be proportionate to business success.

It will come only when personnel people create a broad understanding of the potential benefits a good personnel relations job can have on productivity and future success in labor negotiations. Our personnel people are beginning to meet this challenge.

Most of these people had a strong labor relations background. Negotiation problems have been difficult. They still are, but we no longer bother with these matters alone. Job evaluation, compensation procedures, selection methods, management development, absenteeism studies, etc., are now our province.

Good personnel policy and good business go hand in hand. When both management and personnel recognize this fact, many of the problems which harass us today will disappear.



T. R. BERNER

*Curtiss-Wright or Wrong?
This man will seek the answer
to a management riddle.*

Push Is On for C-W Comeback

By WAYNE W. PARRISH

ONE OF THE OLDEST AND FINEST NAMES in world aviation is heading for a comeback. It has started to regain the reputation which it had all but lost in recent years.

The company is Curtiss-Wright Corporation, and especially its engine division, Wright Aeronautical.

A major management shuffle in May saw the departure of Roy T. Hurley as president and chief executive officer. Firmly in the saddle with the unanimous backing of the board of directors is a 50-year-old lawyer, T. Roland Berner who has the title of chairman and chief executive officer.

With full knowledge of the bad feelings developed in recent years by airlines and the military toward C-W, Berner has embarked on a program of restoring C-W's good name by laying down the law that quality, integrity and service must be the order of the day in the engine division. Berner won't defend the company's reputation up to May of this year—but he is out to try to make quality pay off in the future.

This is good news for airlines still operating equipment powered with the Wright Turbo-Compound engine. Everyone agreed that the engine was basically good. But customers complained bitterly about quality control and the spare parts policy. Berner says he will restore Wright's

good name on engines even if the company loses money doing it.

On the military side the J65 was a controversial engine. Berner is going to try to do something here even though many of the USAF planes powered with the engine are obsolete and inactive. He has one new engine (-ducted fan) which he'll try to sell.

Berner, who is considered one of the keenest lawyers of this generation in New York, and who engineered the General Precision, Inc., combination of such firms as Kearfott, Link, GP Labs and Librascope, knows he is up against a very tough job in rebuilding C-W. The corporation still has a lot of cash on hand—about \$70 million—but many of its product lines have run out. Berner is determined to liquidate a lot of unprofitable activities, kick out the dead wood, and rebuild in the areas of propulsion and electronics, even though C-W is starting pretty late.

Engines? Hopefully, he expects to keep in this field but he readily concedes that General Electric moved in a few years ago to be the No. 2 engine supplier, after the well-entrenched and well-managed Pratt & Whitney.

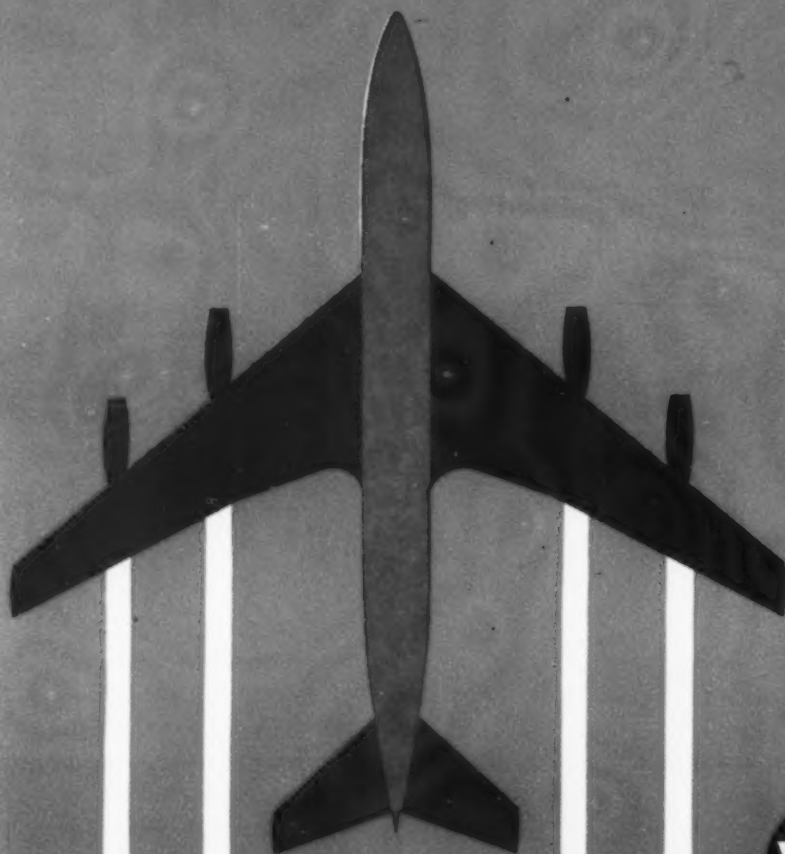
C-W was all but out of the aviation business. Insiders are predicting that Ted Berner will pull it back in, one way or another, and in new directions.

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Allison Prop-Jet Convair certificated for commercial service by Federal Aviation Agency

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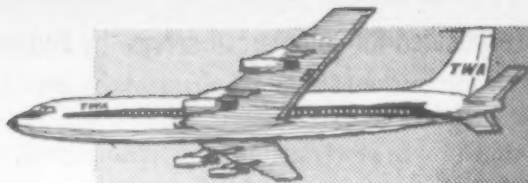
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TWA Cracks Down on Suppliers

When a two cent part can ground a \$5 million airplane, it's time for action, and tech chief "Ray" Dunn means business

By JOSEPH S. MURPHY

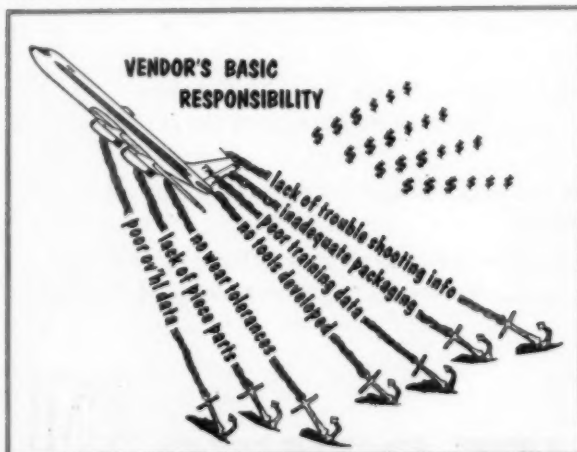
TWA IS AN AIRLINE on the move. It is organized. It is sales conscious . . . service conscious . . . cost conscious.

When it sees a situation getting out of hand, it reacts. When supplier support isn't what it should be and inventory costs skyrocket out of bounds, its v.p. of technical services, R. M. "Ray" Dunn, reacts too.

It was just such a reaction that brought 150 top representatives of 59 of TWA's key suppliers to Kansas City June 1-2 for the first airline support symposium ever held. TWA's invitation was blunt in its implications—attend or risk being counted out as a future supplier.

Equally blunt was the case by case presentation by Dunn & Co. of things that are wrong in supplier support and what must be done about them.

Some manufacturers persist in dealing with the airlines as a 2% tail on a 98% military business, said Dunn. This scene is shifting, he warned, and the decline in military manned aircraft business is bolstering the airlines' share to 10, 20 and sometimes 40%.



Accentuating the negative, here's how TWA pictured the effect of non-support by suppliers on its operation.

The TWA technical head said the jets were expected to produce four times the capacity of piston transports at about twice their cost. Experience shows, however, that their productivity is only 3.5 times greater and their cost is triple that of piston types.

Material costs in the days of the DC-3 ran about 49% of the airline maintenance dollar with 51% going to labor. For later piston types (Super Constellations) materials rose to 58%, are now at 60% with forecasts of 65% by 1965 and possibly 70% by 1970.

A. E. "Al" Jordan, TWA's asst. v.p.-maintenance and overhaul pinpointed what airlines expect in service—engineering drawings, test data, overhaul specs, parts lists, service bulletins—all prepared according to ATA Specification 100.

Jordan cited the example of one supplier who declined to produce disassembly and assembly information on a highly complex jet component because of the "simplicity of its design." On display during Jordan's talk was a \$22,000 jet case shipped to TWA in a cardboard container.

Set a goal, then reach for it

S. L. "Sam" Higginbottom, asst. v.p.-engineering, flight test and inspection, challenged manufacturers to set a reliability goal for their products and then do something about achieving it. He invited them to use the airlines as a means of service testing new ideas, deplored the situation wherein the airline becomes the shuttlecock in a badminton game between the airframe producer and parts vendor with the FAA as the referee.

Higginbottom said TWA will look long and hard for some other vendor when it is faced with such poor design as an instrument that grounds an aircraft in Cairo because a two-cent light bulb and plastic shield can't be replaced. Other examples: a small timing motor valued at \$230 and replaced every 700 hours could be overhauled for \$10. The problem: its producer has no spare parts supply.

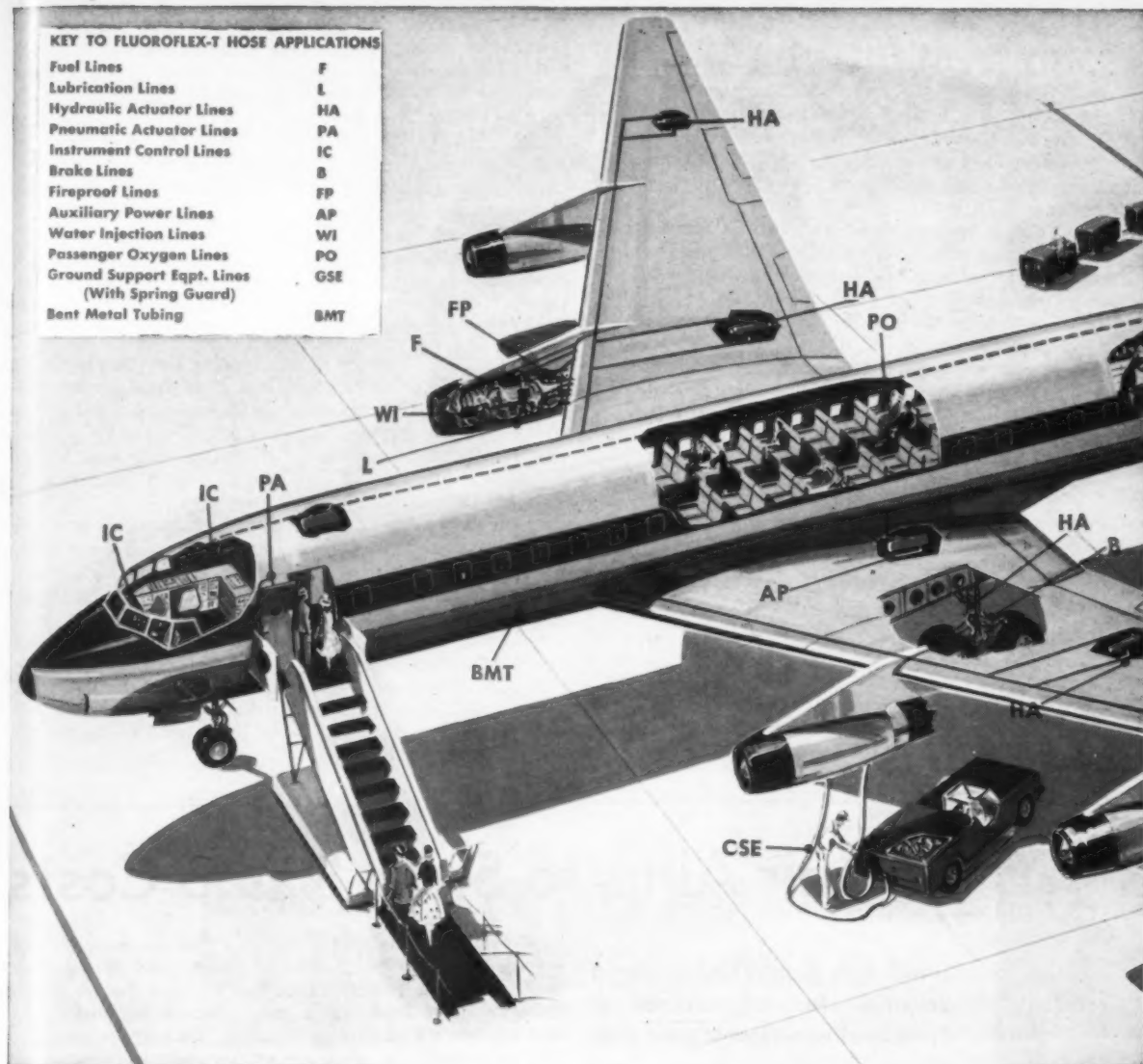
Others: a \$200 meter movement that could be overhauled for \$15 if replacement pivots were available. A \$150 small motor that can't be overhauled for want of a set of \$1 brushes. In one instance a supplier even questioned TWA's ability to overhaul his accessory.

By way of contrast, Dunn interjected the instance of three of TWA's major suppliers who proceeded to build, package and label for shipment some \$6.5 million in parts without having a firm order in their hands.

J. S. Shaunty, TWA's director of technical purchasing, urged suppliers to attack the problems of inventory support;

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to think about future spares when planning initial production; to put more inventory on their own shelves, and to eliminate lead time.

Shaunty said TWA won't argue over the difference of one or two percent in the profit rate of a supplier that provides the services an airline needs. But he warned that TWA in the future will be looking over the shoulders of airframe manufacturers with intensity when it comes to the selection of accessory and equipment vendors with which it wants to do business.

Shaunty cited as inconceivable the situation faced with one new jet supplier who never considered that there would be future need for spare parts support. Once appraised of the facts of life, the supplier came up with an \$8.07 unit cost, but this was trimmed to \$.58 when the true extent of the market potential was nailed down.

For those who might have doubted the scope of a big airline's operation today, here is Shaunty's breakdown of inventory activity compared with that of 1940 when TWA operated a fleet of 39 aircraft of two types. Today it has 193 involving 11 models:

	Then	Now
Inventory items	14,000	84,000
Expendable inventory	\$800,000	\$14 million
Rotable inventory	\$900,000	\$50 million
Points Stocking Parts	24	74
Value-monthly issues	\$130,000	\$2.2 million

TWA's v.p.-purchasing Fred G. Betts took the suppliers to task for extreme inconsistencies in pricing. TWA, said Betts, is paying an average \$44 a pound for one \$5 million jet transport and \$47 a pound for another \$4 million model.

The generator constant-speed drive on one is pegged at \$8,000, on the other \$12,000.

Betts ran through this pricing schedule for two new jets with a big question mark as to the existence of any pricing policy that would justify the variations.

Accessory	Jet "A"	Jet "B"
Main cabin temp. control	\$ 1,537	\$ 329
Turbo compressor	6,416	9,000
Main gear actuator door	573	434
Main gear actuator	766	977
Main entrance door	13,050	11,588
Nose gear door	432	1,175
Heat exchanger	470	1,300
Flight engineer seat	2,590	695

A TWA-staged version of television's "The Price is Right" bore out Betts' contention as panel after panel of suppliers rarely guess even close to the price being paid by TWA. But it wasn't surprising (we guessed wrong, too) as what looked like special aircraft bolts varied in cost from 81¢ to \$72 each, landing lights from \$36.50 to \$336 and lavatory seats from \$5 to \$122 each!

"Don't kill the goose that laid the golden egg," was Ray Dunn's final plea to suppliers. Reduced airline costs mean the ability to buy more aircraft and that will mean more business to suppliers. If TWA and its present suppliers can't turn the cost tide, Dunn warned, somebody else will.

On hand to witness the TWA program were top purchasing people from other major airlines (United, American, Pan Am, Braniff and Trans-Canada). With support from this group, Dunn is optimistic that the TWA action will provide the foot in the door to some joint action by the airlines to curb the cost spiral.



E. K. BROWN

Servair Aims to Slash Ramp Costs

Single firm would handle ramp activities for all airlines if Cleveland experiment goes over

THERE'S A FRESH new approach on its way to solve an old airline headache—costly duplication of ramp services.

Airlines themselves tried to do it years ago at Detroit, but failed badly. About the only thing they could agree upon was to disagree.

Not the least bit discouraged by this past history is E. K. "Ned" Brown, aggressive Cleveland businessman, who is convinced consolidated ramp operations can and should be made to work. As president of Servair, Inc., he has \$300,000 in financing and is negotiating with airlines serving Cleveland to get the show on the road there.

Brown proposes to supply only the muscles—the personnel and equipment for ramp operations, everything that has to do with loading passengers, mail, freight and express. Servair would fuel, service, clean, even supply minor aircraft maintenance. It would handle just about everything but selling and picking up tickets.

The same with cargo. It would do the loading and unloading, but the airlines would still handle the paperwork that deals with what customer is due what shipment.

Once set up in business at Cleveland's Hopkins Airport,

by Brown's estimate a \$1.6 million a year operation, Servair would expand to other cities much in need of the same service. Brown picked Cleveland to start because it is Servair's home base, has a new, efficient terminal layout and because it's an average situation, not big, not small.

The obvious, big advantage of consolidated ramp service is the saving in manpower and equipment. At Cleveland alone Brown figures the airlines are paying better than \$100,000 a year in what he calls "lost idle time:" personnel on duty with no flights to be worked.

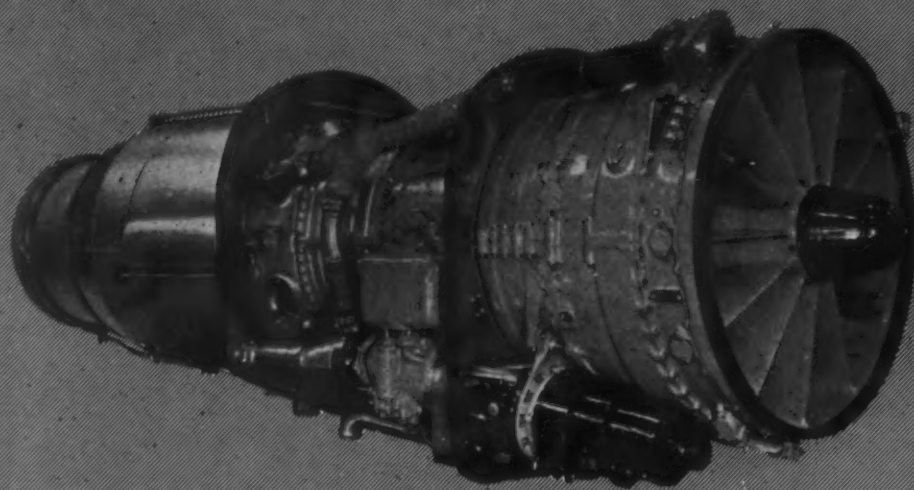
He maintains Servair could supply the same quality of service using 15 to 20% less ground equipment and at a conservative 10 to 13% saving in cost to the airlines. The more airlines that subscribe, the better the economics for all.

If the Cleveland deal works out, Servair would hire all airline ramp service personnel, buy all their present ground equipment and repaint it with a single identification. Passenger ramps would carry a standard sign giving the airline name, flight number and (something some airlines don't supply!) the destination.

In the changeover there would be no layoffs. Normal turnover, which runs high in these work categories, would pare the force down to the new required levels.

How does Servair qualify for the job? Brown himself is an engineer and formerly managed a consolidated truck freight terminal with many of the same problems posed on airline ramps. On the airport side, Servair's v.p. Claude King needs no briefing. Before joining the service firm last year he was associated with Cleveland's airport administration for 32 years. The last 10 he was airport commissioner.

Latest Olympus version—ready for production—
produces 20,000-lb thrust dry...



...ANOTHER ENGINEERING ADVANCE BY BRISTOL SIDDELEY

Security restrictions have just been lifted to permit the release of some details of the current Olympus version, the 21, which is now ready for production.

157-in long and with a 42-in intake diameter, the Bristol Siddeley Olympus 21 is Britain's most powerful military aero-engine. It inherits all the outstanding qualities of its forebears—high power at high altitude, unequalled handling characteristics, low fuel consumption and great operational flexibility. It also possesses the highest thrust/weight ratio of any high-thrust turbojet in the world.

The Olympus series of engines owes its excellent all-round performance to the two-spool compressor system, pioneered by Bristol Siddeley and since adopted by the leading aero-engine producers in Britain and the USA. Proof of Olympus reliability is given by the fact that it has the longest achieved overhaul life, the lowest specific fuel consumption and the highest thrust of any bomber or fighter engine in squadron service with the RAF.

The enormous development potential of the Olympus has repeatedly been proved. The first production version

delivered 11,000-lb thrust dry, the current Olympus 21 has reached 20,000 lb, and an even later version is rated at no less than 33,000 lb with reheat.

Olympus applications

The Olympus 201 already gives the Avro Vulcan B 2, spearhead of the RAF's V-bomber force, an all-round performance unsurpassed by any other aircraft of its type. The Olympus 21 has been designed to allow the Vulcan to reach its ultimate design potentialities.

The Bristol Siddeley Olympus is ideally suited to operation at transonic speeds and an advanced version has been selected to power the British Aircraft Corporation's TSR 2, a new tactical support/reconnaissance aircraft chosen for the RAF. Other Olympus versions are under active consideration for the next generation of civil airliners—the supersonic transports.

For further information please write to Bristol Aero-Industries Limited, 200 International Aviation Building, Montreal 3, Canada. Tel: University 6-5471.



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Sundstrand 'Drives' for New Business

Newcomer to airline business comes up with jet starter system and new water injection pump to broaden its activity in the commercial market

Before the first Pan American 707 jet began scheduled operation in late 1958, Sundstrand Aviation was a non-entity as an airline supplier.

Today, only 20 months later, it is in the business with both feet. And it means to stay, not only as the source of constant-speed generator drives which it produces for all Boeing and Douglas jets, but in other new areas.

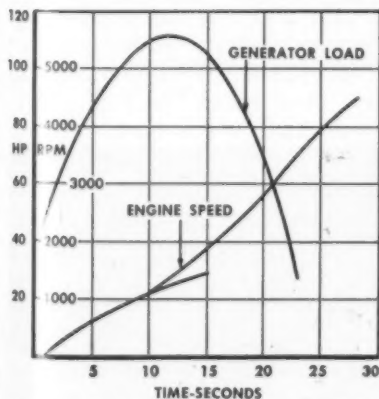
This point was brought home convincingly as the Rockford, Ill. firm played host recently to airlines, transport builders and military services at the first Aircraft Electrical Power System Conference.

With 17 representatives of a dozen of the world's largest airlines on hand, Sundstrand unveiled a promising new adaptation of its generator constant-speed drive as a jet starter system. Aimed at the Boeing 727, it would dispense with a separate ground starter on airline ramps. All that would be required is a 400-cycle ground power unit, a standard fixture today in airline inventory.

Here's how the system operates. Using a combination of the Sundstrand



Biggest Sundstrand business is in constant-speed drives. Here's the unit developed for the Douglas DC-8. Drive for 707 is original KC-135 design.



Sundstrand drive brings engine to light-off speed in only 9.5 seconds, reaches idle speed in 29 seconds.

constant-speed drive and generator in an "about face", the generator becomes an electrical starter supplying the necessary torque to bring the jet up to starting speed. Once started, the system automatically reverts to its conventional role of controlling and supplying the aircraft's electrical power supply.

According to Sundstrand officials, the system would involve no increase in cost and would cut weight by some 53.5 lbs. on each engine when compared to present jet installations where a separate starter is used. However, because of weight savings in the drive design proposed for the 727, the gain on that jet is reduced to about 22 lbs. per engine.

Another important advantage, but less tangible, is the effect of the proposed system on noise reduction at airport terminals. In starting jets via pneumatics today, the first engine must be operated at 80 or 85% of power to supply the required bleed air for starting other engines. This means noise.

With the Sundstrand installation, an engine could be held at idle power while the electrical power produced by its generator would be sufficient to start the remaining jets.

The starter-drive unit is Sundstrand's latest effort. Another—a water injection pump for jet transports—has already made its mark. It, too, is a striking example of the company's aggressiveness

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in the airline market.

Back in the early months of 1959 when water pump failures were plaguing the airlines, the company decided to enter the pump business. Only 14 months ago it began its design work. Today it has four pumps at Trans World Airlines ready for service test and last month it began deliveries at the rate of eight per month for the Boeing 720A.

Sundstrand set out to build a pump that could live under the stiffest requirement of a jet water system. This dictates that the pump has to be able to operate "dry" for the remainder of a flight once all the water has been used or dumped overboard after take-off.

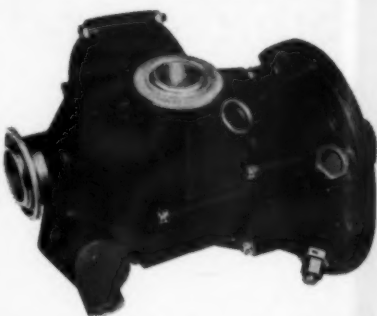
The company gave the job to Sundstrand Turbo division in Denver and it came up with the answer. The new pump is identified as the model 80WP02, an 8.5 lb. unit producing 85 gallons per minute maximum at discharge pressures up to 500 psi. Sundstrand guarantees a life of 1,500 hrs. including components. The new series is called Sundyne, a Sundstrand registered trade mark.

Although Sundstrand is a newcomer to airline accessory rosters, it is an old hand at building constant speed drives. Its first unit was developed in 1945 for the B-36 and since then it has built more than 28,000 for 39 major aircraft programs.

To better serve commercial customers, its field service forces have been re-oriented and representatives spotted in 10 major U.S. cities plus two abroad. Experience with its drives in jet service to date show a premature

removal rate ranging from 0.3 to 0.6 per 1,000 unit hours, but the company expects to improve upon this good performance by getting more life out of troublesome nose roller bearings. A fix is already underway.

Sundstrand's contract overhaul for



New water pump has seal design that permits dry operation for extended periods, is standard equipment on Boeing 720s.

the airlines is picking up at a fast pace. Last month its shop turned out the 291st reconditioned unit for 707s and 34th for DC-8s. It is gearing to handle 50 to 70 drives per month.

With the lion's share of the drive market in the house, some promising new developments on their way and a continuing overhaul business, there's no doubt about it: Sundstrand means to stay as an airline supplier. And just to make its case even more convincing, only a week after its recent customer conference, the company quietly sliced its price schedule across the board on drives and spare parts to the tune of 5%.

The Pilatus Porter

Small Aircraft, Big Cargo

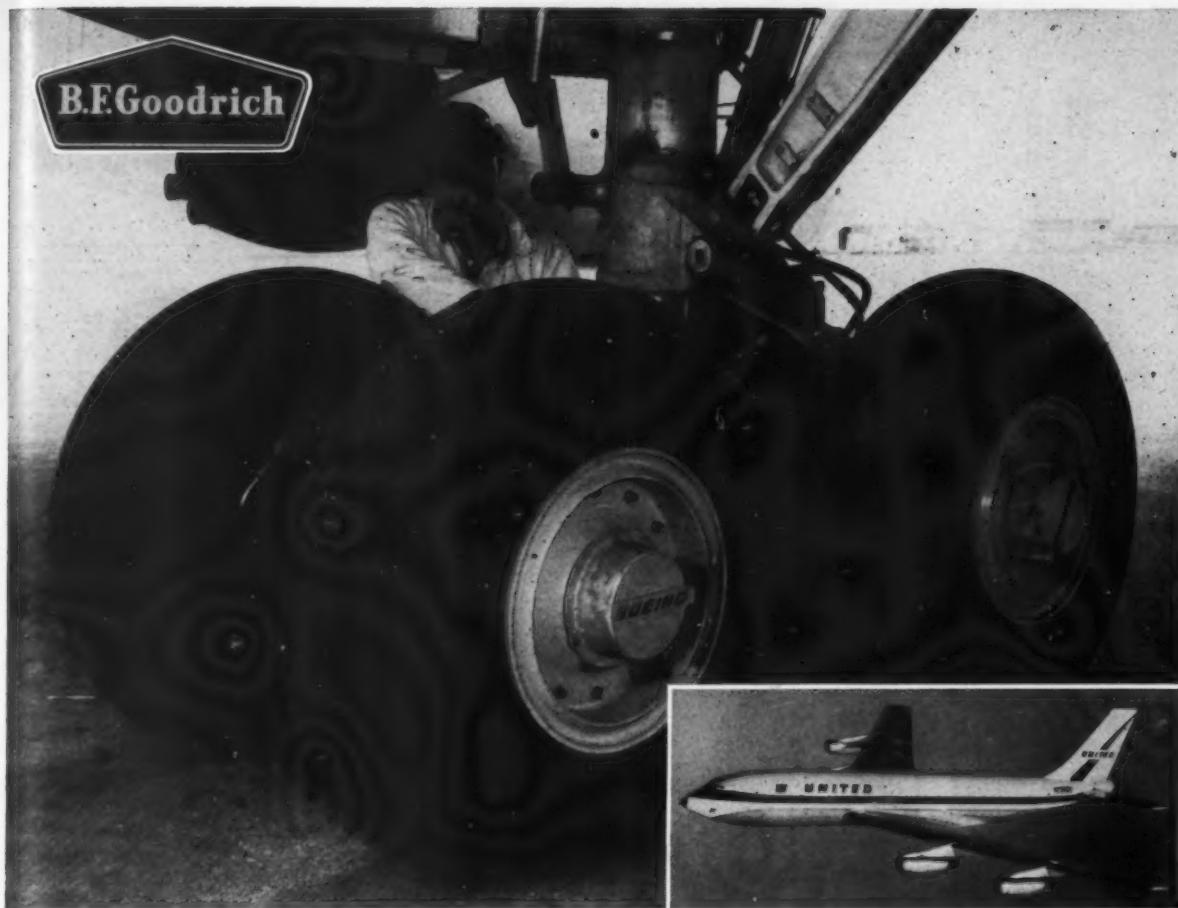
GENEVA, SWITZERLAND—Big loads in and out of little fields at minimum cost. This, in a nutshell, is the story of Porter, a single-engine STOL utility aircraft manufactured by Pilatus Air-

craft Works Ltd. at Stans, Switzerland. Priced at \$35,000 with a 275-hp Lycoming engine or \$38,000 with a 340-hp supercharged unit, the Porter

Continued on page 44



Deceptively small size conceals plenty of cargo space on the short-haul Porter.



Boeing 720 is equipped with 34x9.9 dual nose wheel tires, and four 40x14 tires on each main landing gear. B.F. Goodrich supplies fabric-tread tires, as well as the wheels and brakes for

this aircraft. In "refused takeoff" tests for certification, the 720 was accelerated to 165 mph, then braked to a stop. There were no tire failures in 14 such test runs.

Real cool tires for United's new Boeing 720's ... B.F. Goodrich dimpled fabric tread

These cooler running BFG fabric-tread tires, along with BFG wheels and brakes, are now going into service on United Air Lines' newest jets ... the Boeing 720.

BFG fabric-tread tires last longer...the secret is in "unitized" construction. In conventional tires, flexing between carcass and tread causes heat build-up at high speeds. In the fabric-tread tire, reinforcing fabric is built into the tread rubber. This reduces internal tread flexing, tires run cooler. And the dimple design provides superior resistance to cutting and chipping. These features mean savings in time and money.

BFG fabric-tread tires, used on all U. S. commercial jets and virtually all first-line military jets, have been qualified to speeds as high as 300 mph. For information on your requirements, contact *B.F. Goodrich Aviation Products*, a division of *The B.F. Goodrich Company*, Dept. AL-7, Akron, Ohio.



Cross-section of B.F. Goodrich fabric-tread tire shows how fabric laminates are built into rubber tread stock.

B.F. Goodrich aviation products

Research Responsibility Results

FROM SATELLITES TO SAFETY HARNESS . . .

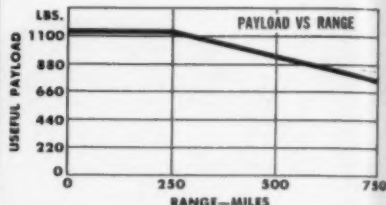
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represents an excellent buy for anyone requiring a rugged workhorse.

The Porter was designed to be used for hard work. Its double doors provide a width of almost 5 feet for loading bulky cargo. Loads of up to 1,100 lbs. can be carried. At a take-off weight of 3,970 lbs. it can carry a payload of 935 lbs. for a distance of 500 miles



at a cruising speed of 125 mph. At this take-off weight, using the 340-hp engine, take-off run is about 420 feet. Landing run is 340 feet and landing speed about 43.5 mph.

There are no gimmicks in the Porter. The STOL characteristics result simply from the large wing area (306.8 sq. ft.), low wing loading (12.9 lbs./sq. ft.) and the high-performance Lycoming powerplant.

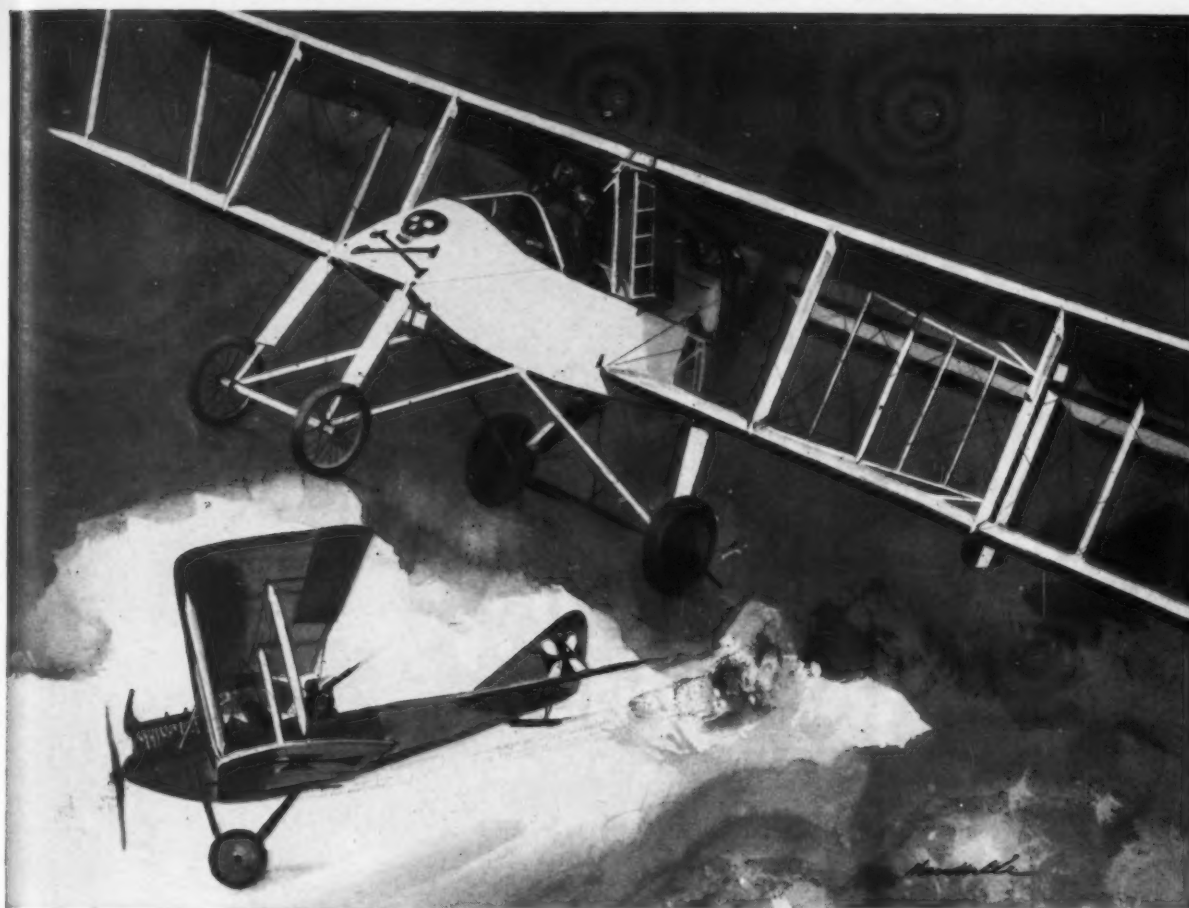
Typical loading for Porter

	275 HP ENGINE	340 HP ENGINE
5 passengers + Pilot (average 165 lbs.)	990 lbs.	990 lbs.
Baggage	154 lbs.	110 lbs.
Oil	28.6 lbs.	28.6 lbs.
Fuel for 500-mile stage	411.4 lbs.	411.4 lbs.
Useful Load	1,584.0 lbs.	1,540.0 lbs.
Weight equipped	2,376.0 lbs.	2,420.0 lbs.
Gross Weight	3,960.0 lbs.	3,960.0 lbs.

How much does the Porter cost to operate? Pilatus has gone to considerable trouble to prepare operating costs in dollars and cents. The following figures are all with the use of the 340-hp Lycoming engine. With a utilization of 500 hours per year the cost per-flight hour (excluding the pilot's pay) is \$30.23. The cost per-passenger-flight hour (on the basis of five passengers being carried) is \$6.05. To carry each passenger 100 miles costs \$4.84.

For use as a freighter, the Pilatus Porter has an operating cost per flight hour of 3.23¢ with the 340-hp engine. The cost per pound payload per 100 miles works out at 2.58¢.

The Pilatus program calls for the manufacture of five prototypes and, initially, 20 production Porters. The aircraft has been extensively demonstrated in Europe and a demonstration tour to Central and South America is provisionally planned for the middle of this year.



July, 1915 . . . Nungesser gains his first victory in a Voisin Bomber.

Early War Birds- THE VOISIN TYPE L

This World War I plane was the second model in a long series of Voisin pushers used by the Allies for bombing and ground support from 1914 through 1917. The Type L, powered with a 140-horsepower Salmson water-cooled radial engine, had a top speed around 60 mph and an initial rate of climb of about 265 feet per minute. Armament consisted of a machine gun or 37 mm cannon mounted in the front cockpit. Lumbering and slow, the Voisin was nevertheless a durable craft. Later models were equipped with more powerful engines and used extensively by the French for night bombing.

It was in a Voisin L that Lieutenant Charles Nungesser, one of France's most colorful aces, achieved his first victory. In March of 1915, he was assigned to a Voisin bomber squadron in spite of an expressed wish to be a "fighter"

pilot. On July 31, 1915, after 55 bombing missions, Nungesser set out to prove himself a fighter pilot by deliberately going after an Albatros two-seater. Maneuvering his clumsy Voisin as best he could, he attacked . . . ordering his gunner to open fire at close range. The Albatros gunner fired back, and a brief skirmish ensued until the Albatros fell away, its engine disabled. Nungesser then cut off an attempted glide back to safety, forcing the German plane to land behind the Allied lines. It was a notable feat, considering that the Albatros was faster and more maneuverable than the Voisin.

Nungesser was soon transferred to a fighter squadron where his daring deeds won him wide acclaim. In spite of being wounded no less than 17 times, he became the third leading French ace . . . gaining 45 accredited victories.



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AFTER THESE THREE YEARS, the Forty Four operating profit curve will climb steeply. The difference in profit potential for the following years is substantial.

Any consideration of a specific example requires certain assumptions regarding scheduling, future rates, and load factors, but, under a representative set of conditions our analysis indicates: — that a fleet of 25 piston powered aircraft currently being converted into cargo carriers, could be replaced and retired by a fleet of 8 Forty Fours. The above assumptions and statements are based on the unlikely premise that cargo rates will remain at present levels. If they are reduced, as seems inevitable, the situation will favor the Forty Four even more strongly.

THE FORTY FOUR. The Canadair Forty Four, with its combination of low direct operating costs, high block speeds and large payload capacity, is the world's most economical cargo aircraft. Delivery schedules can be arranged to introduce the Forty Four into airline service fourteen months from contract agreement.

CANADAIR LIMITED, MONTREAL, CANADIAN SUBSIDIARY OF **GENERAL DYNAMICS**

Merger Plans Face Rough Sledding

*Don't let the optimists fool you,
the odds against mergers are potent*

By SELIG ALTSCHUL

Everyone favors airline mergers—air carriers, CAB (presumably), and the financial community. Despite this universality of purpose and intent, prospects for any near-term consummation of airline mergers are indeed slim.

Announcement of the proposed TWA-Northeast union was greeted as a forerunner of a series of airline combinations. But this proposal is slated for some rough sledding.

The obstacle course for mergers was laid out by the basic Civil Aeronautics Act of 1938 and remains in effect today. The existing law directs the CAB not to approve any arrangement which would "result in creating a monopoly . . . or jeopardize another air carrier not a party to the agreement." This is a negative mandate and is troublesome since there are always one or more carriers to claim jeopardy by merger of a competitive combination.

In the TWA-Northeast case it soon became evident by the sharp opposition expressed by National, a carrier badly hurt by the entry of a third airline in the lush New York-Florida market. Eastern, too, may be expected to file a vigorous objection. Certainly, if an anemic Northeast could thin out traffic to the detriment of two established carriers, a TWA merger would so confuse Northeast as to make it far more formidable.

A CAB precedent?

Not so long ago the CAB turned down a proposed arrangement whereby Pan American World Airways would have become the major stockholder in National. Could this decision set a precedent for the upcoming TWA-Northeast case? In the final analysis—because Northeast (and TWA) operate outside the U.S.—the decision ultimately will be made in the White House.

But the fact remains that mergers and consolidations would go a long way to correct industry ills stemming from the multiplicity of competitive

routes. Even without excessive route duplication, the rapid advances of the air transport industry would tend to promote fewer but stronger airlines.

Capital requirements for an airline were vastly different when operations were conducted with \$100,000 DC-3s. The modern jet demands a capital outlay of more than \$5 million, irrespective of supporting equipment. Jets must be utilized profitably. Carriers must have the resources and markets to support such expensive equipment.

The CAB infers it will welcome "desirable" mergers. But the Board's blueprint for such combinations has not been revealed. The fact remains that CAB does not have the power to compel airlines to merge. But it probably can prod, both officially and unofficially.

Plea for amendment

Board member Boyd recently detailed the difficulties in moving on mergers resulting from the "due process" requirement. For this reason, responsible sources believe consideration should be given to amending the Federal Aviation Act to permit a more affirmative regulatory attitude toward airline mergers. The CAB would be called upon to develop a master plan for a U.S. airline network which would serve as a merger blueprint.

In the meantime, on the financial front, rapid breaking events may pose regulatory and management challenges. While the technical channel to subsidy is open to trunks, it is an unlikely proposition. Congressional appropriation committees, the administration and the CAB all display strong resistance to subsidy.

At least three trunk carriers suffered substantial cash drains last year. The trend continues into 1960. Drastic actions are clearly indicated in the pursuit of remedies. Subsidy is no longer the answer.

Member Boyd recently declared, "There is nothing in the Federal Aviation Act providing for the sanctity of existing corporate enterprise."

The admonition is clear. The carriers must look to their own efforts to stave off losses endangering their solvency.

Financially weak carriers, as they stabilize operations and shore up their resources, obviously will improve their bargaining positions in merger discussions. And even marginal airlines with permanent certificates have franchises which, combined with other trunks, can augment revenues of stronger carriers.

Weaker carriers are not without leverage in the bargaining pit. Their franchises can prompt entry to major markets long coveted by other major lines. It may be that two or more airlines will have designs on the same markets.

With current trends against additional certification of new routes in the domestic pattern, expansion to new markets could come only by acquisition of existing certificates of public convenience and necessity. At that point, negotiations between the weak and strong carriers may be conducted without duress.

Trunks Edged Into Black By \$5 Million in April

Domestic operations of the U.S. trunks showed the first reversal from a dismal first quarter experience with a \$4.9 million operating profit. However, losses for the first four months exceeded \$10.6 million.

Eastern, with a \$1.7 million profit, led the field as three carriers (Northeast, Northwest and TWA) remained on the deficit side of the ledger.

Compared to 1959 performance, however, there was little solace in the April results. Total loss on operations for the first four months stood at \$16.8 million compared to a profit of \$26.3 million last year.

Instead of a net profit of \$13.5 million for the first four months in 1959, the carriers lost \$10.6 million this year. The difference: about \$43 million in operating profit and \$24 million in net.

Capital, on thinnest ice financially, showed an operating profit of \$300,000.

April Marks First Upturn in '60

First signs of recovery from the bad-weather and accident-induced slump in traffic for the first quarter showed up in April as U.S. trunks and locals showed increases over 1959 performance. (See opposite page.)

Instead of a 1% deficit in passengers and 0.7% in passenger-miles recorded in March, domestic trunks notched a 6.9% jump in passengers and 10.8% in passenger-miles. In April, only Capital among the major trunks continued to fall behind 1959 performance and it by a scant 0.2%.

In international operations for March, U.S. carriers had dropped 3.2% in passengers from 1959 while seat-miles were up 1.3%. April showed a 10.2% increase in passengers while seat-miles edged up 11.3%. Pan American in April had a 19% increase in

passengers on the Atlantic as it boosted capacity by 21.6%.

Among the locals, Allegheny showed the biggest gain, its passengers increasing 30.9% over 1959 while capacity rose 42.8%. Only Mohawk and Piedmont failed to show an increase over 1959 performance. The situation for MOH no doubt results from its stewardess strike which extended two days into April.

As a group, the locals had a 12.4% increase in passengers and 16.8% in capacity in April compared with 2.5% and 5.9% respectively in March.

The most striking gains continue to show up in helicopter operations. March traffic was up 90% in passengers and 66.7% in capacity. In April, passengers climbed 69.2% and capacity 63.7%.

Intra-Hawaiian competition between Aloha and Hawaiian Airlines showed the largest increases in capacity. Aloha seat-miles were up 69.2% over 1959 in March and a whopping 84% in April, while Hawaiian's capacity was down 5% in March but up 78.6% in April. In passengers, Aloha was up 70.6% in April over '59 while Hawaiian showed a 22.9% increase.

The split in the traffic went 69% to 31% in favor of Hawaiian in March and 67% to 33% in April.

CAL Takes On-Time Lead

A newcomer to the front spot in airline on-time performance emerged in March as Continental Air Lines led the field both with jets and in overall operations. It recorded a 75.2% on-time record for its fleet and 66.9% for jets.

Capital, continuing its upward trend, had a 74.1% record to place second while Northeast ranked third at 73.9%.

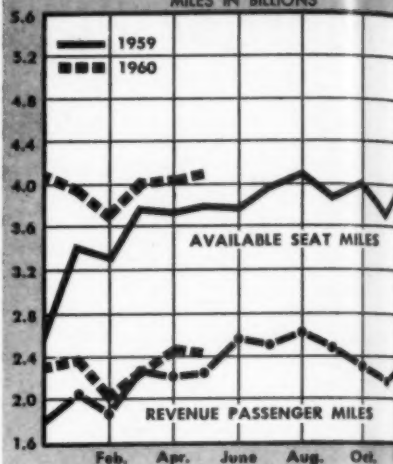
In jet operations, TWA held second spot with 52.3% of its nonstop and one-stop flights on time within 15 minutes. Delta had an almost identical record with its DC-8s at 52.2%.

The on-time reports continue to show a wide spread between the first and last-place carriers, from 75 to 41% for trunks, 66 to 13% in jet operations and from 73 to 32% in Electra service.

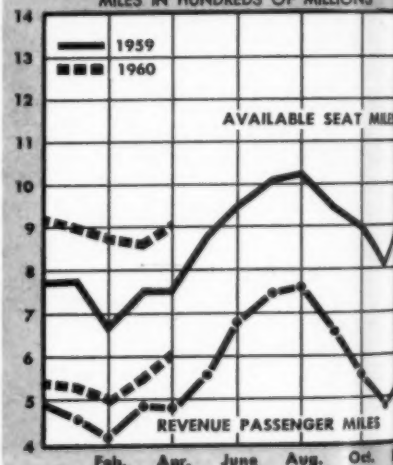
Locals varied from 90.8% for West Coast (high for the industry) to a low of 38% for Pacific.

HOW'S TRAFFIC— Among U.S. Airlines

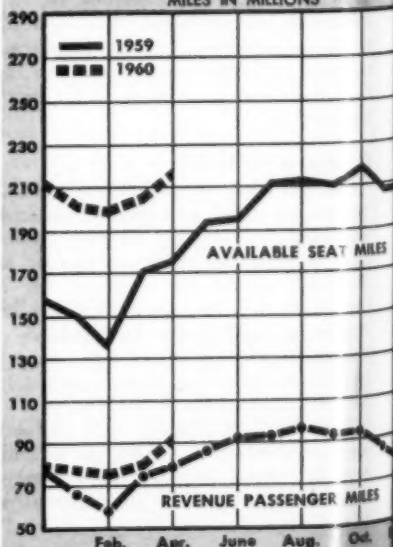
DOMESTIC TRUNKS
MILES IN BILLIONS



INTERNATIONAL
MILES IN HUNDREDS OF MILLIONS



LOCAL SERVICE
MILES IN MILLIONS



ON TIME BOXSCORE

March, 1960

Carrier Rank (In order)	On time to 15 min. late
TRUNKS	
1 Continental	75.2%
2 Capital	74.1
3 Northeast	73.9
4 United	73.4
5 American	73.0
6 Braniff	70.3
7 Eastern	67.3
8 TWA	67.1
9 Western	65.3
10 Northwest	64.5
11 Delta	63.8
12 National	41.6

BOEING 707 AND DC-8

1 Continental	66.9%
2 TWA	52.3
3 Delta	52.2
4 American	50.4
5 National	45.0
6 Braniff	39.2
7 United	32.0
8 Eastern	18.5
9 Northeast	13.1

LOCKHEED ELECTRA

1 American	73.5%
2 Eastern	64.2
3 Braniff	50.2
4 Western	38.7
5 Northwest	37.5
6 National	32.9

LOCAL SERVICE

1 West Coast	90.8%
2 Piedmont	90.0
3 Central	88.3
4 Allegheny	80.8
5 North Central	78.8
6 Mohawk	73.7
7 Bonanza	68.2
8 Trans Texas	67.6
9 Lake Central	65.4
10 Southern	57.2
11 Frontier	54.6
12 Ozark	53.4
13 Pacific	38.0

U.S. Airline Traffic for March, April, 1960 vs. 1959

This complete summary compiled by AIRLIFT Magazine from Official CAB data.

	March						April					
	Revenue Passengers (000)			Revenue Passenger Miles (000)			Revenue Passengers (000)			Revenue Passenger Miles (000)		
	1960	1959	% Change	1960	1959	% Change	1960	1959	% Change	1960	1959	% Change
DOMESTIC												
American	637	604	5.5	463,924	419,479	10.6	699	646	8.2	509,229	445,974	14.2
Braniff	187	175	6.9	84,947	76,018	11.7	189	175	8.0	88,910	75,224	18.2
Capital	287	329	-12.8	121,688	144,065	-15.5	333	337	-1.2	143,576	143,850	-0.2
Continental	100	72	38.9	62,806	33,830	85.7	107	77	39.0	46,517	36,994	25.2
Delta	273	262	4.2	153,480	139,179	10.3	289	260	11.2	165,161	132,910	24.3
Eastern	673	723	-6.9	374,624	430,966	-13.1	727	708	2.7	397,767	394,161	0.9
National	148	181	-18.2	102,927	125,770	-18.2	158	160	-1.3	111,216	103,535	7.4
Northeast	104	96	8.3	48,870	52,886	-7.6	124	101	22.8	55,523	46,366	19.7
Northwest	149	142	4.9	111,629	109,515	1.9	154	142	9.9	112,435	105,901	6.5
Trans World	384	385	-0.3	322,758	310,797	3.8	428	405	5.4	364,183	332,953	9.4
United	531	559	-5.0	357,042	390,962	-8.7	598	561	6.6	410,678	379,362	8.3
Western	142	124	14.5	77,914	65,827	18.4	138	119	16.0	73,810	60,801	21.4
	3,615	3,653	-1.0	2,282,409	2,299,294	-0.7	3,946	3,691	6.9	2,501,203	2,257,931	10.8
INTERNATIONAL												
American	11	12	-8.3	11,516	13,249	-13.1	10	9	11.1	10,352	9,222	12.3
Braniff	4	4	....	8,239	7,634	7.9	5	3	66.7	9,930	4,221	59.4
Caribair	34	30	13.3	2,426	2,156	12.5	34	30	....	2,379	2,026	....
Delta	2	4	-50.0	2,914	4,778	-38.9	3	4	-25.0	3,459	4,623	-25.2
Eastern, Overseas	34	34	....	50,008	48,151	3.9	40	33	21.2	56,451	46,615	21.5
San Juan	27	25	8.0	41,185	37,718	9.2	31	24	29.2	46,958	36,645	28.1
Bermuda	3	5	-25.0	1,934	2,892	-33.1	5	4	....	3,422	3,952	-8.4
Mexico	4	8	-50.0	6,889	7,541	-8.6	4	4	....	6,071	5,998	1.2
National	2	8	-75.0	1,280	5,876	-78.2	2	7	-71.4	1,402	5,247	-65.7
Northwest	15	12	25.0	27,446	27,211	1.4	15	12	25.0	27,118	26,534	5.2
Hawaiian	3	3	....	9,186	7,736	18.7	2	2	....	5,299	5,749	-7.8
Panagra	11	11	....	16,770	15,915	5.4	10	11	-9.1	13,765	14,282	-3.6
Pan American, System	222	228	-2.6	358,151	334,310	7.1	250	228	9.6	385,164	334,434	15.2
Latin American	98	109	-10.1	115,352	112,257	2.8	93	99	-6.1	109,256	103,207	5.9
Atlantic	87	90	-3.3	122,441	115,244	6.4	119	100	19.0	154,787	127,242	21.6
Pacific	33	26	26.9	116,363	103,966	11.9	33	26	26.9	115,930	101,318	14.4
PDX/SEA-HON	4	2	50.0	11,160	6,347	75.8	3	2	50.0	9,371	4,777	96.2
Alaska	4	3	33.3	3,795	2,831	34.1	5	3	66.7	5,191	2,667	94.6
Trans Caribbean	NA	NA	....	NA	NA	....	7	6	16.7	10,285	9,100	13.0
Trans World	20	25	-20.0	59,784	75,896	-21.2	28	28	....	78,868	89,262	-11.4
United	9	8	12.5	23,211	19,589	18.5	12	8	50.0	29,283	19,904	47.1
Western	4	4	....	6,736	6,611	1.9	5	3	66.7	7,337	5,203	41.0
	368	380	-3.2	568,683	561,384	1.3	421	382	10.2	637,193	572,673	11.3
LOCAL SERVICE												
Allegheny	42	40	5.0	7,474	6,883	8.6	55	42	30.9	10,463	7,326	42.8
Bonanza	23	19	21.1	5,679	4,434	28.1	23	19	21.1	5,787	4,841	19.5
Central	13	13	....	2,470	2,601	-5.0	15	14	7.1	2,742	2,678	2.4
Frontier	26	22	18.2	6,791	5,273	28.8	28	23	21.7	7,302	5,800	25.9
Lake Central	19	17	11.8	2,951	2,446	20.7	20	19	5.3	3,164	2,974	6.4
Mohawk	25	43	-41.9	4,769	8,315	-42.6	42	46	-8.7	8,496	8,875	-4.3
North Central	77	64	20.3	13,249	10,897	21.5	79	71	11.3	13,662	12,041	13.5
Ozark	43	44	-2.3	7,536	7,530	0.1	48	48	....	8,480	8,227	3.1
Pacific	39	35	11.4	8,818	7,838	12.5	42	35	20.0	9,785	7,903	23.8
Piedmont	29	39	-25.6	4,097	7,970	-49.2	40	41	-2.4	8,183	8,317	-1.6
Southern	24	22	9.1	4,316	3,864	11.7	28	22	27.3	4,979	3,919	27.0
Trans-Texas	25	23	8.7	5,695	5,323	7.0	27	21	28.6	6,192	4,961	24.8
West Coast	32	26	23.1	7,313	4,971	47.1	33	26	26.9	7,647	5,074	50.7
	417	407	2.5	83,158	78,545	5.9	480	427	12.4	96,882	82,936	16.8
HELICOPTERS												
Chicago	25	10	150.0	427	184	132.1	28	13	115.4	477	245	94.7
Los Angeles	3	3	....	98	108	-9.3	3	4	-25.0	114	117	-0.9
New York	10	7	42.9	200	143	39.9	13	9	44.4	270	165	63.6
	38	20	90.0	725	435	66.7	44	26	69.2	863	527	63.7
INTRA HAWAII												
Aloha	21	16	31.3	3,674	2,172	69.2	29	17	70.6	4,264	2,318	84.0
Hawaiian	34	36	-5.6	5,040	5,335	-5.5	43	35	22.9	9,219	5,162	78.6
	55	52	5.8	8,714	7,507	16.1	72	52	38.5	13,483	7,480	80.3
ALASKA												
Alaska	9	8	12.5	7,116	3,822	86.2	10	9	11.1	8,071	8,091	-0.2
Alaska Coastal	3	3	....	403	318	26.7	4	4	....	407	409	-0.5
Cordova	2	1	100.0	377	250	50.8	1	1	....	341	178	91.6
Ellis	3	4	-25.0	210	223	-5.8	4	4	....	277	275	0.7
Nor. Consolidated	2	2	....	551	557	-1.1	2	2	....	694	518	34.0
Pacific Northern	7	1	....	5,773	6,607	-12.6	8	8	....	6,932	7,797	-11.1
Reeve	1	1	....	1,065	842	26.5	3	1	100.0	1,378	698	97.4
Wien	3	3	....	651	789	-17.5	3	3	....	679	733	-7.4
	30	29	3.4	16,146	13,408	20.4	34	32	6.3	18,779	18,699	0.4

AL CARGO

(Ton miles in thousands)

	Freight			Total Scheduled			Freight			Total Scheduled		
	% Change			% Change			% Change			% Change		
	1960	1959	% Change	1960	1959	% Change	1960	1959	% Change	1960	1959	% Change
AAX CO												
Flying Tiger	7,144,039	273,903	1.2	7,310,791	292,798	2.2	6,407,409	214,769	-1.1	6,636,122	232,681	1.0
Rider	2,090,212	2,496,499	-16.3	2,131,291	2,524,300	-15.6	1,736,289	2,016,046	-13.9	1,796,352	2,044,866	-12.2
Slick	474	521,675	-9.0	474,866	521,675	-9.0	499,251	566,806	-11.9	499,251	566,806	-11.9
Aerolias												
Seaboard & Western	1,976,326	1,624,926	21.6	2,529,009	1,630,190	55.1	1,468,946	1,375,678	10.7	2,031,299	1,664,466	22.0
	11,685,443	11,973,975	-2.4	12,445,957	12,118,935	2.7	10,111,895	10,651,073	-5.1	10,963,024	11,079,472	-1.1

Note: Hawaiian Airlines figures are scheduled services only. All others are all services.

Wives Just Never Seem to Understand

Aviation writing is a dangerous profession. And the greatest danger, believe me, is your wife. She doesn't understand about things.

Take the other night. I got home a little late for dinner, put the Maserati away and strolled into the living room.

"Where have you been, little one?" said my wife in a warm, friendly voice, looking up from where she was polishing the floor.

"American Airlines had a sort of, uh, cocktail party. Introducing a new galley for the 707." I reached for the evening paper.

"A new girly for the 707?"

"No, no, you misunderstand. A new galley."

"Any steward present?" She is a Berman fan.

"Well, yes, as a matter of fact. One or two." As a matter of fact there were 17 but why complicate life?

"Were they pretty?"

Now what are you going to say to a question like that? Do you know any ugly stewardesses? Really ugly, I mean. Ugly co-pilots, yes. I've known some co-pilots so ugly they wouldn't let them into the cabin because it scared the passengers. I once knew a co-pilot so ugly the FAA inspector didn't want to ride in the jump seat next to him. But stewardesses have to be fairly pretty or they make them reservations clerks.

"Of course, they were pretty."

"Did you talk to them?"

"Of course, I talked to them. I have to gather material for the column, don't I?" Well, don't I?

"What color were they?"

"Color? They were purple, what color did you expect?"

"No, silly, I meant were they blonde, brunette or redhead?"

"All three."

"Three? I thought you said there were only two?"

"What's for dinner?"

The Thorn Persists

Next morning at breakfast, the problem came up again.

"What are you doing for lunch?" my wife asked, looking up from where she was polishing the floor. "I thought perhaps I would walk the three miles to Ventura Blvd., take the bus downtown

and we could have lunch together."

"Well, actually, darling, I'm tied up for lunch. Western Airlines is having a sort of, uh, graduation luncheon at the Beverly Hills Hotel. I'm going to sponsor a stewardess!"

"You're going to what a stewardess?"

"Sponsor. It's a sort of thing you do when they graduate. The airline calls you up and asks will you sponsor a stewardess."

"Well, I never . . ."

Well, I did. And I want to tell you about it. Somebody has to listen. My wife certainly won't.

Warm Welcome

When I walked into the luncheon, Bill Bell, Western's district sales manager, met me at the door. Lurking in the background and smiling paternally were public relations manager Ken Smith and vice president Stan Gewirtz.

"I'll get you a girl," Bill Bell said. Just like that. You know what I felt like I was getting into, don't you? You just know.

Bell went and brought back a very pretty girl for me whose name I am not going to tell you because she probably has enough trouble without suddenly encountering my wife some day at 28,000 ft.

He introduced us and she said, "I'll get you some champagne," just like those girls in the Japanese geisha houses who go whooping away after the sake. For the next three hours we drank champagne together on the balcony overlooking the palm-fringed swimming pool and ate lunch and when it came time for her to graduate, I pinned wings on her and kissed her and she pinned wings on me and kissed me.

The room was full of Beverly Hills editors and police chiefs and mayors and things, each paired off with a pretty stewardess and clutching a glass of champagne and I tell you some of those guys looked like little boys turned loose in the cookie shop.

Their hands were shaking so nervously when it came time to pin the wings on that you'll be able to recognize that class for the rest of their lives by the stab wounds.

The girls sang songs and cried and everyone cheered and there were senti-

mental speeches. It was one of the greatest public relations occasions ever dreamed up. I doubt if some of those civic officials ever fly on any other airline. There they stood, loaded with champagne, smeared with lipstick and wearing Western stewardess wings.

When it was all over, they pointed us toward the door and gave us a little vial of perfume to take home to our wives. You know what my wife did with that perfume, Bill Bell? She threw it at me.

And that's not all. Next day, I had to tell her Air France had invited me to spend a week in Paris on their inaugural polar jet flight.

Like I said, this aviation writing is a dangerous business.

AIRLIFTS

• **How long would it take to say "Orient"** 14,000 times? That's the amount of time Northwest says it's saving daily by answering telephones with "Northwest Airlines" instead of saying "Northwest Orient Airlines." Change was made in the "interest of efficiency." NWA gets 14,000 calls a day.

• **Airline accounting offices** these days are filled with all kinds of expensive and complicated electronic gadgets, calculators, etc., that turn out statistics in nothing flat. But there's at least one non-believer in the industry, and visitors to United's San Francisco budgets and controls office do a double-take when they see H. T. King sitting at his desk using an abacus.

This is an instrument used in ancient and medieval Europe, and still used in Oriental countries, for performing calculations by sliding counters on rods or in grooves. Shanghai-born "H. T." (for Hsien Tsu) says he can add faster on the 12-year-old \$2 abacus than he can on a \$1,000 electric calculator. Art Hamlin, office manager, vouches for the gadget's accuracy, but hastens to add that he has no plans for recommending that the abacus become standard equipment for anyone but H. T.

A NEW CONCEPT FROM SUNDSTRAND

provides combination electric starting and 400-cycle generating system with these advantages:

STARTING—uses only one engine pad • weight and cost saving by eliminating separate starting system • simplifies ground support equipment

- engine motoring • electric cross starting from idling engine
- no slip or overrunning clutches

GENERATING—eliminates power interruption when transferring from external power to aircraft system • full overload capacity from engine idle to maximum speed • automatic engine torque limiting • low hydraulic pressure at cruise assures long life • parallel operation

- integral disconnect • QAD mounting

SUNDSTRAND STARTER-DRIVE

The Sundstrand Starter-Drive provides the necessary means to utilize the aircraft a-c generator as a motor, permitting combination of electric starting and 400-cycle power generating functions in a single system. This dual function eliminates the requirement for separate starting systems and offers appreciable savings in cost and weight.

The Starter-Drive concept is based on the inherent ability of aircraft a-c generators to function as electric motors, and the capability of Sundstrand hydrostatic transmissions to provide large torque multiplication with an infinitely variable ratio over the speed range.

The Sundstrand Starter-Drive includes a differentially connected hydraulic pump and motor hydrostatic transmission. The transmission provides torque multiplication during starting and constant output speed for 400-cycle power generation.

As a starting system, the Starter-Drive utilizes existing electric components. The generator is supplied with external 400-cycle power. The transmission is programmed to allow the generator to accelerate freely to synchronous speed, and then to multiply the synchronous motor torque to the level required for engine cranking.

In a multi-engine aircraft, other engines can be started by electric cross-over from units of equal rating. Furthermore, cross starts can be accomplished with the operating engine at idle speed.

As a generating system the highest standard of power quality is maintained. The Starter-Drive system includes paralleling capability for multiple-system installations.

Sundstrand Starter-Drives are backed by experience gained in producing more than 28,000 constant speed drives for 39 major aircraft and missile programs.



SUNDSTRAND



**WRITE FOR 12-PAGE
STARTER-DRIVE BROCHURE**

This fully illustrated brochure gives principles of operation, performance data, and complete specifications.

**SUNDSTRAND STARTER-DRIVE
CAPABILITY**

Engine Designation		KVA Rating				
Military	Commercial	15	20	30	40	60
J-60	JT-12					
TF-30	JTF-11					
—	ARB-163					
—	ARB-963					
R. R. Avon	RA-29					
J-52	JT-8					
J-57	JT-3					
TF-33	JT-3D					
J-79	CJ-805					
J-75	JT-4					

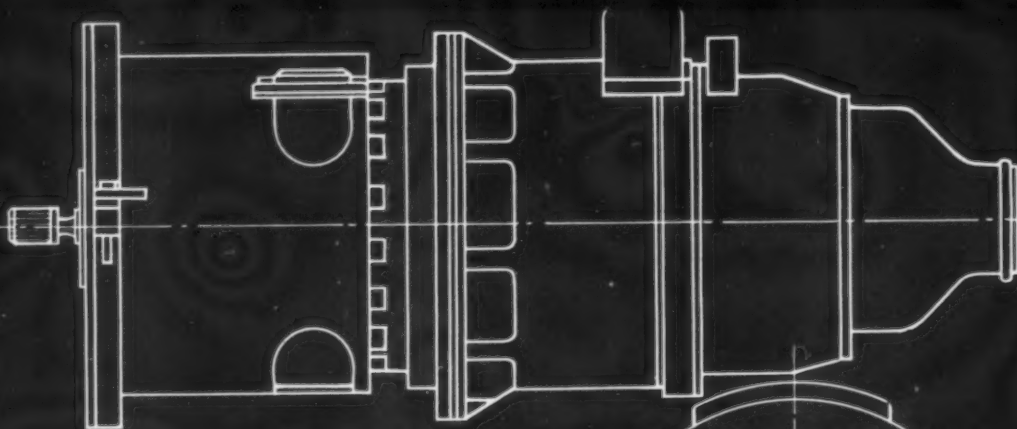
The bar graph above shows current engines which may be started by generators of indicated kva ratings with the Sundstrand Starter-Drive. The Sundstrand Starter-Drive system is adaptable to meet starting requirements for any turbo-jet or turbo-prop engine.

SUNDSTRAND AVIATION

DIVISION OF SUNDSTRAND CORPORATION, ROCKFORD, ILLINOIS

District Offices in: Arlington, Texas; Hawthorne, California; Rockford, Illinois; Dayton, Ohio;
Seattle, Washington; Stamford, Connecticut; Washington, D. C.





NEW STARTER-DRIVE

**combines electric starting and
generating in a single package**





London Airport Bows to Facelifting

Passenger facilities receive a shot in the arm as 'Shantytown' falls prey to progress

By ANTHONY VANDYK

LONDON—The British capital's operationally superb airport soon will have passenger facilities which are worthy of its stature as Europe's most influential airport.

Long overdue, replacement of London Airport North—"Shantytown" is Aviation Minister Duncan Sandy's term for it—has just been announced officially. The first half of the new passenger building to house long-haul overnights is expected to be ready by mid 1961 and the second half by early 1962.

The new long-haul building will be located a few hundred yards from London Airport Central, a modern terminal used mainly for intra-European passengers.

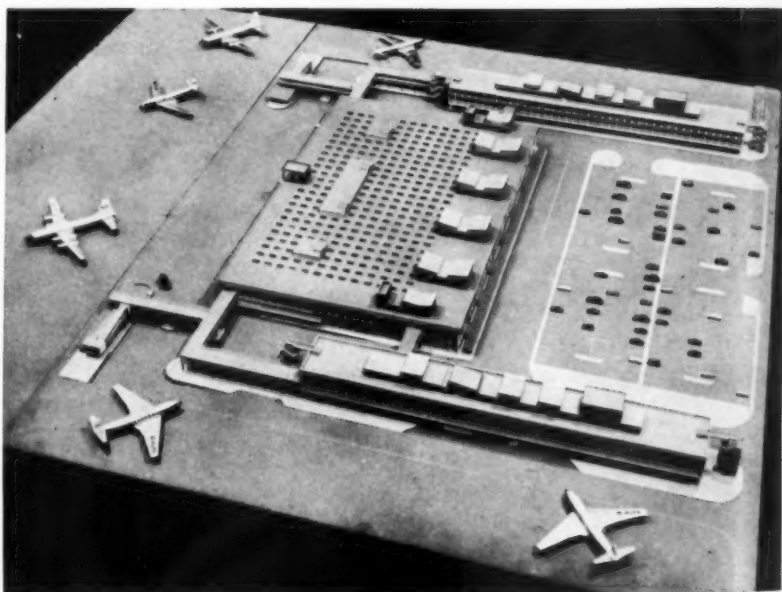
Traffic—by non U.S. standards—is booming at London Airport. Passenger total this year is expected to top five million. One million will fly on long distance flights alone. During peak periods the airport handles up to 600 aircraft operations daily.

The airport is well equipped, technically, for heavy traffic. More than 2,000 people are employed by the Ministry of Aviation (which owns and operates the airport) on telecommunications, control and administration.

There are six runways, one of which is being lengthened from 9,500 ft. to 11,000 ft. The runways are arranged in parallel pairs. Pilots using London Airport have nothing but praise for it.

The control tower is lauded by the Ministry of Aviation as the most advanced and comprehensive in the world.

The approach lighting system—known as the Calvert line-and-bar system—features a line of lights leading to the center line of the runway, crossed by other bars which grow shorter as they near the runway threshold. Two types of lighting are provided—incandescent for normal use, and powerful sodium discharge white



How long-haul passenger terminal will look on opening day next year. Passenger building 430 ft. by 280 ft. is flanked by pair of 411 by 55 ft. office buildings.

incandescent lights for use in poor visibility.

An innovation in lighting is the use of special green lights sunk into the center of runways and taxiways. They are operated from the control tower and are used to guide aircraft taxiing at night.

User fees, which have largely subsidized the fifteen-year development of the facility, are reportedly high, though Ministry officials will not release exact figures. Some idea of the "bite" may be gained from the \$1.10 placed on each departing international passenger. This charge, like landing charges, went up last year.

There are concessions aplenty. The Ministry asks concession operators, "What percentage of your gross could you give to the ministry?"

Banks are treated on a different basis. The Ministry regards banks as essential services and simply charges

a rental for the space they occupy. All other concessions pay a percentage of their gross.

Considerable revenue comes from auto parking fees. Even airline crews must pay. Short-term parking, however, is free.

Another source of revenue is the 50 cent charge for access to the visitors' viewing terrace. More than a million visitors use the terrace each year.

The airport's biggest buildings are the maintenance bases of BOAC and BEA. They provide employment for most of the 30,000 people who work at the airport. BOAC has its headquarters building and overhaul base there. In fact, the headquarters building forms part of the maintenance base, comprising two pairs of hangar pens, an engineering hall 800 ft. long and 90 ft. wide, and an eight story office block separating each pair.

The whole structure is of reinforced concrete and is believed to be the largest single hangar building in the world. It can house, say, 12 Bristol Britannias, and provides working space for about 4,000 people.

Another hangar capable of taking another six aircraft has been built nearby for use by BOAC.

The huge, ultra-modern BEA overhaul base comprises two U-shaped buildings each containing two rows of five hangar pens, each with a span of 100 ft. Several British independent airlines have overhaul bases there.

The airport has its own police force, fire service and telephone exchange, appropriately named Skyport. Just beyond its perimeter is a newly opened luxury hotel named The Skyway. It's a 160-bedroom four-story building owned and operated by Seaway Hotels Ltd. of Toronto, Canada.

A second hotel is under construction and will be operated by the Lyons organization which owns a chain of restaurants and hotels in England.

The journey from the airport to the center of the British capital is one of the most tedious in Europe, due to heavy traffic. There is no firm program to alleviate this situation, although a railroad link and an overhead monorail are under consideration. Several years ago there was an experimental helicopter service but this was abandoned by BEA as too costly.

Connections to the other airports which serve the capital are poor. There is one daily bus trip to Gatwick, a field 25 miles south of London used mainly for BEA flights to the Channel Islands, but no link whatever to Southend, east of the capital used by several of the smaller British independent airlines.

Fear loss of business

One of the chief reasons that airlines have been reluctant to respond to Ministry of Aviation pressure to switch operations to Gatwick is the prospect of loss of considerable inter-line business. Gatwick is served by fast trains since the passenger terminal forms part of a railroad station. It is owned and operated by the Ministry of Aviation, while Southend Airport is owned and operated by the local municipality.

If air traffic in the London area continues to develop, the British government may have to require more use of Gatwick and Southend. It is estimated that by 1970 some 13½ million passengers will be flying to and from London. Aircraft movements then will near 300,000 yearly.

Even when the new long-haul building is completed in mid-1962, London Airport will not be an integrated

whole. Under the present setup there is no central authority for development of the airport.

The Ministry of Aviation has many interests. Moreover, its narrow parliamentary mandate prevents it from carrying out broad planning dealing with other vital non-aviation areas. Slow and haphazard airport development since 1945 is largely due to lack of a vigorous body like the Port of New York Authority or the Paris Airport Authority.

If there had been, London Airport very likely would have duty-free shops like Shannon, Amsterdam and Copenhagen. And it would have had its own hotel long before 1960.

Copenhagen Promotes Its Airport

Want a good lesson in how to promote your airport and tell its story at a minimum in cost? Get hold of a copy of the brochure published recently by Copenhagen Airport. It's a masterpiece.

The report does a beautiful job of covering all aspects of operation in the first 20 pages—runways, terminal, fueling equipment, ATC, meteorology, snow and fire equipment. To support publication, the remaining 10 pages contain advertisements from local concessionaires who serve the airport.



"But I made one mistake. I didn't realize it took Hokanson H-35 Ground Air Conditioning to keep my customers happy!

"Gave 'em everything else, though. Sleek, fast jets...comfortable seats...delicious food served by beautiful gals!

"Business got so good that air traffic jammed up at airports. It took so long between passenger boarding and take-off that the time became known as the 'Sweat Box Hour!' Terminal waits grew longer, cabins got hotter, and passenger tempers shorter. Passenger howls finally reached the Board of Directors—and here I am."

Yes, the "sweat box hour" is well known to air travelers. That's why leading airlines—United, Braniff, SAS, BOAC, KLM, Northwest, and many others—have done something about it. They use Hokanson H-35 Mobile Ground Air Conditioners to assure comfortable customers while awaiting take-off. Investigate the many advantages a Hokanson H-35 can provide your airline. Write today!



H-35 Mobile Air Conditioner

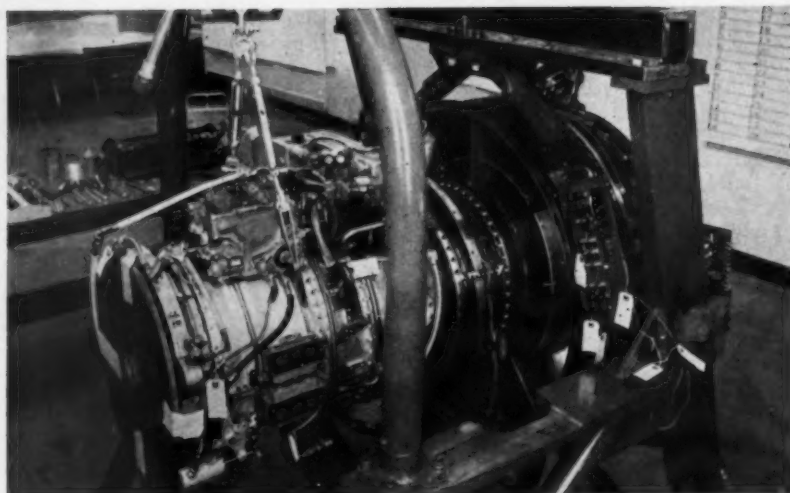
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"RELIABILITY IN SPECIALIZED AIR CONDITIONING"



Flight Propulsion



CF700, 4000-pound thrust aft-fan engine, has successfully completed its initial series of tests ahead of schedule.

CF700 Testing Begins Ahead of Schedule

LYNN, Mass.—The CF700, G.E.'s first small aft-fan engine, has successfully completed its initial series of test runs ahead of schedule.

Operation was highly satisfactory. Runs checked out the new engine's basic mechanical and operating characteristics. There was no appreciable vibration. Stress, temperature and pres-

sure were well within limits. Control, fuel and lubrication systems functioned without incident. Visual inspection at the end of the test cycle showed all engine parts in excellent condition and operating properly.

For more information on the CF700, check GED-3986. See coupon.

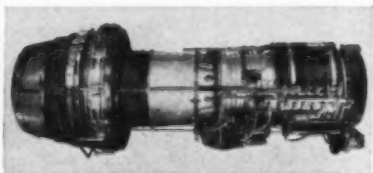
FAA Certificates CJ-805-23/-23A Engines

CINCINNATI, Ohio—General Electric received Federal Aviation Agency type certification of two models of its aft-fan engine during June.

The certificate, numbered 1E5, covers the Company's CJ-805-23 engine rated at 15,850 pounds thrust, and the CJ-805-23A, with a thrust of 16,100 pounds. General Electric has been shipping production aft-fan engines to Convair since late April for the 635-mph Convair 990 jet airliner.

Convair 990's are scheduled to enter commercial service in 1961 with American Airlines, Swissair, Scandinavian Airways Systems (SAS), and REAL of Brazil.

The test program accomplished for this certification concentrated on the



FAA has certificated CJ-805-23 and -23A.

fan section of the engine, since the basic engine has already been certified by FAA, and is in commercial service. The aft-fan unit testing included operation during overspeed, overtemperature, fatigue, stress, and icing conditions.

For additional CJ-805-23 information, check GED-4117 and GED-4192, latest CJ-805 Progress Reports. See coupon.

McDonnell F4H Completes Carrier Suitability Trials

ABOARD USS INDEPENDENCE—McDonnell's F4H, powered by twin General Electric J79 turbojets, recently completed its carrier suitability trials.

Launched by steam catapult 18 times during the trials, the Phantom II demonstrated that it can operate easily from today's modern U.S. Navy carriers.



McDonnell F4H demonstrated that it can operate easily from carriers like the USS Independence.

The Mach 2+ Phantom II demonstrated its ability to fly at slow 125 knot carrier approach speed.

Wave-offs were accomplished on one engine, without using its afterburner. Rapid and reliable response to throttle movement, especially important to carrier operations, was demonstrated. Engine performance and performance of the two paralleling 20 KVA hydraulic constant-speed drives also produced by the Flight Propulsion Division were excellent.

Squadron deliveries of the F4H/J79 will begin later this year.

For more information about F4H/J79 carrier trials, check GED-4106. For constant speed drive information, check GEA-6890. See coupon.

Delta Orders 3 More 880's

ATLANTA, Ga.—Delta Air Lines has ordered three additional Convair 880 jet airliners. The General Electric-powered aircraft will be delivered in August and September, 1961. All ten 880 jet airliners first ordered by Delta will be delivered this year.



Sketch of Kaman HU2K shows how J85 pod mounts to provide boost power.

J85 Boost Promises Increased Helicopter Speed, Lift, Range

WASHINGTON, D. C.—An economical new method of substantially increasing the speed, lift, range, and versatility of newest military helicopters has been announced by the Kaman Aircraft Corporation and the General Electric Company.

The method uses the currently available G-E J85 for boost power and could be ready for flight testing in six months without major development expense.

Engineering studies by Kaman show that addition of the jet boost system to the Navy's newest turbine-powered utility helicopter, the HU2K, would increase speed 40 percent, lift 20 percent, and range 17 percent over the already high levels achieved using the basic General Electric T58 powerplant. Hovering and climb characteristics would also improve.

Detachable pod for the J85 is about 50 inches long, 30 inches in diameter, and weighs 400 pounds. It would be equipped with a simple "plug-in" type connector and could be attached or removed by two men in a matter of minutes. No major helicopter alterations are necessary for adoption of the boost system.

Directional control of the jet exhaust stream could be preset or pilot controlled by rotation of the engine exhaust nozzle to give either maximum horizontal thrust for speed, maximum vertical thrust for lift, or intermediate thrust for boosting both lift and speed. For more information about the J85 and its many applications, check GED-4095. See coupon.

New CJ610 Turbojet Offered for Small Executive Aircraft

LYNN, Mass.—A new 2700-pound thrust turbojet for small business aircraft is being offered by General Electric.

Designated the CJ610, this turbojet is a commercial version of the proven military J85, and a companion engine to the 4000-pound thrust CF700 aft-fan engine now on test.

The 355-pound CJ610 is a dry J85 to which have been added the CF700-2 bottom-mounted gearbox and accessory package. Or, in other words, the CJ610 is identical to the CF700 except a turbojet tailcone replaces the CF700 aft-fan unit.

CJ610 development will parallel the CF700 program. FAA certification is scheduled for December, 1961.



New CJ610 turbojet produces more power for its size than any existing aircraft powerplant.

Prototype CJ610 engines for flight testing can be delivered nine months from order.

The CJ610 will produce more power for its size than any existing aircraft powerplant. It is only 40 inches long, 17.7 inches in diameter. Guaranteed thrust rating is 2700 pounds.

Together, the CJ610 and CF700 provide a broad spectrum of power for aircraft manufacturers.

If the CJ610 is chosen as the initial powerplant for an aircraft, the CF700 represents the logical follow-on for future growth versions.

The basic J85 gas generator, which is common to the CJ610 and CF700, is already proving itself daily at sea level and at altitude. It will have accumulated more than 50,000 operating hours by February, 1962, when these new powerplants become available.

For more information about the CJ610, check GED-4208. See coupon.

New Military Aft Fan Provides 22,000 Pounds of Thrust

CINCINNATI, Ohio—A new G-E military aft-fan engine, the MF239C, is designed to produce more than 22,000 pounds of thrust for sub-sonic aircraft.

The MF239C uses a growth version of the operationally proven J79 gas generator and an advanced aft fan.

Engine designers have skillfully matched MF239C by-pass ratio and fan pressure ratio to provide significant turbofan performance improvements for military mission requirements.

Qualified 22,000-pound thrust engines can be available in July, 1963. For more information, check GED-5005. See coupon.

FOR MORE DETAILED INFORMATION on these and other developments in General Electric products, contact your nearest G.E. Flight Propulsion Division representative or indicate below the brochures you would like to receive.

General Electric Company
Section B206-12
Schenectady 5, New York

- ☐ GED-3986, "CF700-1 Turbofan"
- ☐ GED-4106, "F4H/J79"
- ☐ GEA-6890, "Constant-Speed Drives"
- ☐ GED-5005, "MF239C Aft Turbofan Power"
- ☐ GED-4208, "CJ610 Turbojet"
- ☐ GED-4095, "J85 Turbojet"
- ☐ GED-4117/4192, "CJ-805 Progress Report"

Name _____
Title _____
Company _____
Address _____

Progress Is Our Most Important Product

GENERAL  ELECTRIC

Delta — first to fly the fastest Jet Convair 880



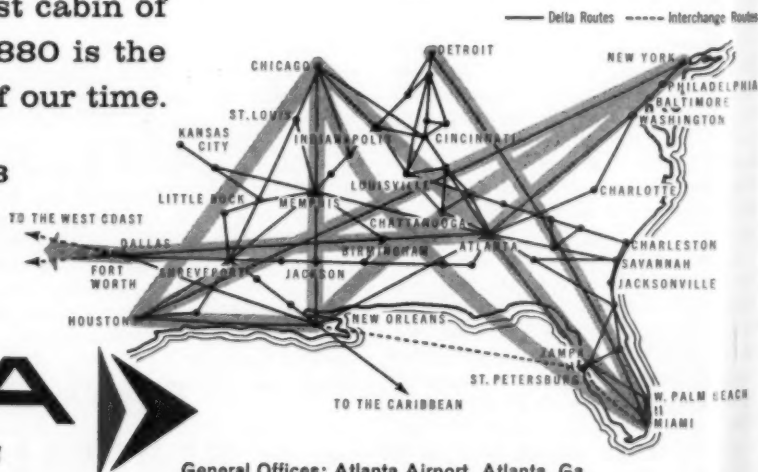
World's Fastest Jetliner — holder of ocean-to-ocean transcontinental commercial airliner speed record... averaging 667 miles an hour.

Delta was first in the world to fly this unchallenged Champion of the Jets. Convair 880's, together with a fleet of magnificent DC-8's, are expanding Delta's pattern of jet service the length and breadth of its system. Cruising at 615 mph, the 880 out-distances all other jetliners while boasting the quietest cabin of any 4-engine jet. Delta's 880 is the most advanced airliner of our time.

Delta Convair 880 and DC-8
Jet Service Routes
— now or by Aug. 1.

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The air line with the BIG JETS



General Offices: Atlanta Airport, Atlanta, Ga.

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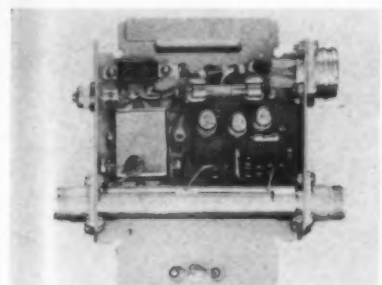
Bold New Plan in Packaging

KANSAS CITY, MO.—Jet transport builders and the airlines that buy and fly them have an interesting new offer to consider in airborne electronics packaging.

Wilcox Electric Co., most active of the major suppliers in design of complete packaged communications and navigation installations, is broadening its sights in this area.

Instead of restricting its sales efforts on CANARI systems to customers who buy Wilcox "black boxes" to put on the racks, the company is out to sell its know-how in packaged electronics rack design as a product in itself. Should a company buy some Wilcox gear to go along with the rack, so much the better, says one company official.

CANARI, which stands for Communications and Navigation Airborne Radio Instrumentation," is the label



A neat 14-ounce package that checks out ATC beacon transponders.

adopted by Wilcox for its packaged systems when it introduced them in 1956.

A good example of what such a rack design can save in weight and cost is ably demonstrated by Wilcox' success on the Lockheed Electra. The installation developed for Eastern Air Lines came out 265 lbs. lighter and between \$2,000 and \$3,000 less costly than normal single-mount installations. Now Wilcox hopes to extend these same savings (and attract some new business) via new aircraft types such as the Boeing 727 and others.

The Electra isn't its only showcase to prove its capabilities. As the company's biggest airline customer, Eastern has bought similar packaged installations

for its Convair 440s and Douglas DC-7s. New York Airways will have one on its Vertol 107 turbine helicopters. Bonanza Airlines and Aloha among the locals have installations on their Fairchild F-27s.

In business transports, CANARI packages are available for a variety of Beech and Aero Design models. One is underway now for the Grumman Gulfstream and another is being proposed for the Lockheed JetStar.

In all of these instances, Wilcox has come up with a custom-designed package complete with mounting racks, control heads, power supply and all necessary wiring. Instead of mounting each individual black box, the complete rack is bolted to the airframe through shock and vibration isolators.

In new navaid business, Wilcox is in the thick of the competition to sell ATC radar beacon transponders. It got a running start in this field several years ago when it bought the rights to a unit developed by Melpar, Inc. Since then it has sold about 450 to commercial airlines including TWA, Pan American, Delta and Eastern.

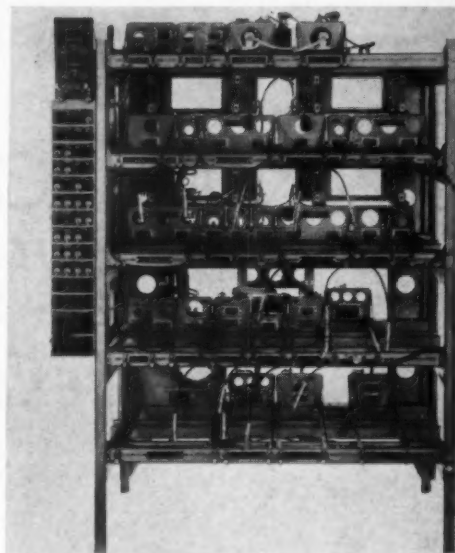
On the military side it is now filling out an order for 3,700 APX-44 systems, a military IFF unit with commercial radar beacon capabilities.

Although airline units now in service were designed for the ICAO-adopted two-pulse side-lobe suppression system, Wilcox has a modification now available which will make its gear usable with the three-pulse system due to be adopted by FAA in the U.S.

Company officials were pleased no end with the performance of the modified gear during a recent demonstration for British government officials at FAA's Atlantic City test facility. The Model 714 transponder, reworked to operate with either two- or three-pulse systems, sailed through the demonstration without a hitch.

A new Wilcox development for use with the transponder is a neatly packaged, transistorized, tester that tells the pilot whether his transponder is operating and also when it is being interrogated from the ground.

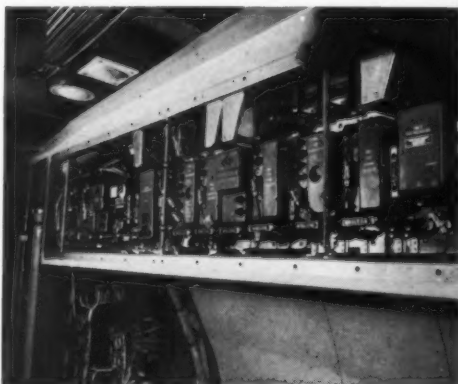
The idea came to Wilcox from Pan American engineers in the form



This Lockheed Electra CANARI rack, shown without black boxes, saved 265 lbs. and cost \$2,000 to \$3,000 less than individually-mounted installation. The Wilcox package is used by Eastern Air Lines.

of a buzzer test set about the size of a shoebox. Wilcox put its packaging know-how to work and came up with a unit that weighs less than a pound and sells for about \$150. It's identified as the Model 758 transponder function tester and has already been adopted by a number of carriers.

Wilcox also has entered its bid for a share of the single sideband (SSB) ground equipment field with a variety of units. One, in the form of a modification kit, permits adaptation of existing Model 96 AM transmitters to SSB service at about 35 to 40% of the cost of a new SSB transmitter.



One of two CANARI systems developed by Wilcox for the F-27. Alternative design is vertical with rack running from floor to ceiling.

UNITED AIR LINES

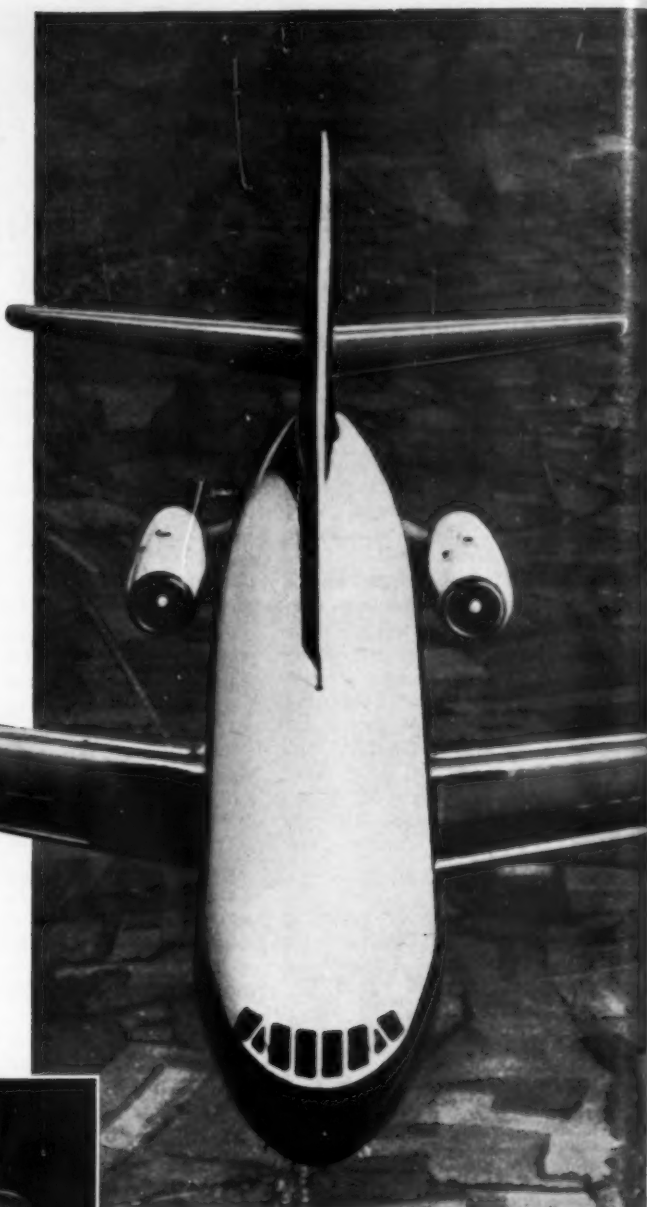
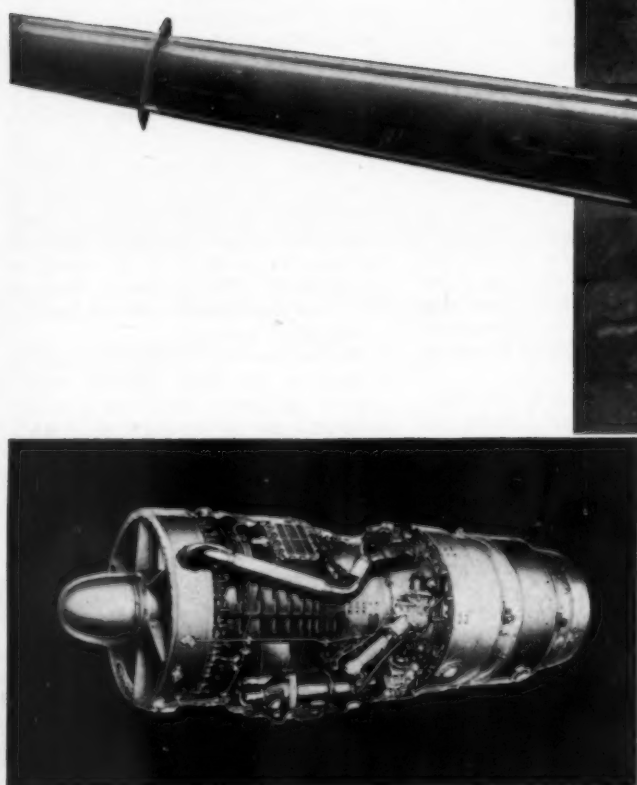
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IN THE AIRLINES



EBERT



HAUGEN

W. L. Pollock, Northwest's western region public relations mgr., named director of public relations for the company, based in St. Paul.

Robert A. Ebert, former director of personnel and labor relations for Northwest, elected v.p.-personnel. **Donald H. Hardesty**, asst. treasurer, elected treasurer. **William J. Eiden**, former treasurer, named asst. to the president-finance.

Kenneth B. Haugen, with Northwest 24 years as pilot, flight standards chief and mgr. of flight service, named director of newly-created flight operations dept.

Alfred J. Moccia, an asst. v.p. of American, elected v.p.-tax and insurance administration.

Roger Schlieder, formerly with Cresap, McCormick & Paget management consultants, named asst. v.p.-financial planning and analysis of TWA. **Lawrence Prybylski Jr.** resigned as corporate training advisor of Socony Mobil Oil Co. to become director-personnel development of TWA. **C. R. Mathews**, sales mgr. in Italy, appointed to newly-established post of regional senior director-sales and market development, Paris.

Capt. James A. Maxwell, Pan American's sector chief pilot at Houston, named operations mgr. of Latin American Div. **Klein Mitchell**, PAA resident rep at Boeing, appointed asst. mgr. of Miami maintenance base.

Edward M. Hayes, United's factory rep at Douglas, named supt. of engineering for new aircraft at San Francisco maintenance base.



MAXWELL



HAYES

Douglass Wood, Braniff's mgr. in Cuba for 12 years, appointed mgr. of convention and group sales, based in Dallas.

Reshuffling continues at Capital. Marketing dept. reassignments include: **W. D. Smith** from commercial sales mgr. to passenger sales director; **W. E. McGarry** from New York sales mgr. to agency sales mgr.; **James McGilvray** from asst. New York sales mgr. to administrative

asst. to asst. v.p.-sales; **M. P. Foster** from LaGuardia operations mgr. to system cargo sales mgr.

In Capital's operations dept., **Clark Luther**, pilot, named director of flight operations; **Clifford H. Taylor**, cargo sales mgr., appointed director of ground operations; **N. F. Egger**, supervisor of operations planning, named asst. to v.p.-operations.

John Hillgoth, former asst. to the director of cargo traffic for Air Transport Assn. and recently director of sales of Riddle, named gen. sales mgr. of Eagle Airways (Bahamas), based in Miami.

Tatsuhiko Kawabuchi, former Hong Kong mgr. of Japan Air Lines, transferred to New York as deputy gen mgr., American div., and traffic and sales director.

Eastern announced four maintenance-engineering appointments: **R. H. Fitzgerald**, warranty administrator in Miami, named director of stores. **P. H. Sanders**, former director of quality control for Northwest, is area gen. supt. of maintenance, Atlanta. **G. J. Miller**, supt. of inspection-Miami, promoted to director of quality control. **D. C. Miller**, supervisor of production control, promoted to administrative asst. to v.p.-maintenance and maintenance engineering.



HIGGINS



CHASE

Capt. G. F. Wallis, North Central's chief pilot, appointed to new post of mgr. of flight operations.

Edward M. Higgins Jr. promoted from director of cargo and specialty sales to gen. sales mgr. of Alaska Airlines.

Walton E. Wood resigned as v.p.-sales of Aloha.

Tony Kamel, former Dallas sales mgr. of Trans-Texas, named gen. sales mgr.

Roger Chase Jr., who has been Middle and Far East sales director of TWA, appointed gen. sales mgr. of Ethiopian Airlines, succeeding **Daniel P. Reid**, appointed mgr. of industry sales procedures for TWA. Ethiopian has received management assistance from TWA since 1945.

C. D. Loveless, of American's cargo staff, named director of cargo field performance appraisal. **Russell Thayer**, Pittsburgh city mgr., appointed director of military traffic in airfreight dept.

Clarence E. Moses, former Delta sales rep, joined Southern as director of agency, interline and military sales. **William R. Scaife**, formerly with an Atlanta architectural and engineering firm, is facilities supervisor.

F. Paul Miscione promoted from Chicago regional sales mgr. to U.S. sales mgr. of Mexicana.

Joshua G. Marash, of El Al's London staff, named east coast regional mgr., New York.

Wouter van de Bunt rejoined KLM as administrative asst., U.S. sales, after serving as Capital's mgr. of long-range planning.

Robert B. Parsons promoted from mgr. of schedules planning to asst. to v.p.-traffic and sales of Delta.

Albert A. F. Murphy promoted from asst. mgr.-agency sales to mgr.-military and government sales of Eastern.

AMONG THE SUPPLIERS



HINMAN



DECKMAN

T. T. Hinman, gen. sales mgr. of Lockheed Aircraft Service, elected v.p.-sales.

Edward C. Leeson, formerly with Fairchild, named v.p.-marketing of Kollsman Instrument Corp.

Ben W. Badenoch, gen. mgr. of Aero Hydraulics Div. of Vickers Inc., elected v.p.

Earl A. Robertson, former mgr. of airline development sections of Teleregister Corp., appointed mgr. of airline sales.

Samuel P. Crago, former production products mgr. of Hamilton Standard Div. of United Aircraft, appointed v.p. and gen. mgr. of The B. G. Corp.

Three executive changes by Allison Div. of General Motors: **William O. Watson** from mgr. of sales and contracts to technical asst. to operations mgr.; **E. M. Deckman** from asst. mgr. to mgr. of sales and contracts; **William E. Goohs** from mfg. mgr. of transmission operations to asst. mgr. of mfg.

Also at Allison, **Norman E. Eggers**, former commercial sales mgr., becomes mgr. of commercial and military engine and propeller sales; **Donald D. Davis**, who has been asst. mgr. of commercial sales, named mgr. of military and commercial contracts; **J. T. Wills**, former mgr. of Washington zone office, heads turboprop engine sales. Parts and service departments have been consolidated under **Fred H. Steuber**, who has been service mgr.

J. J. Dempsey promoted to sales mgr. of Vap-Air Div., Vapor Heating Corp., based in Los Angeles.

HONORS

J. T. Trippe, president of Pan American, named by Chicago Assn. of Commerce and Industry to receive the 1960 International Achievement Award for World Peace.

Tore H. Nilert decorated with Royal Order of Saint Olav for outstanding services to Norway in his capacity as president of Scandinavian Airlines System, Inc.



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The operating subsidiaries, Vickers-Armstrongs (Aircraft), English Electric Aviation and Bristol Aircraft, though merged, will continue to operate under their own names in order to preserve continuity of responsibilities and service.

Behind British Aircraft Corporation lie the strengths of the Vickers, English Electric and Bristol Groups.

Negotiations have been completed with the Hunting Group for British Aircraft Corporation to acquire a controlling interest in Hunting Aircraft.

LIMITED BRISTOL AIRCRAFT LIMITED AND HUNTING AIRCRAFT LIMITED

X-Ray Spot Checks Mean Big Savings for Fairchild

One of the best organized portable X-ray inspection techniques in the industry is slashing costs by 75% and manhours by 80% in spot tests on wing structures of Fairchild F-27s.

Using a unit developed by Westinghouse—the Baltospot "200"—the Fairchild program has been in operation for two years providing 600 hr., 1,000 hr. and 1,200 hr. inspections.

Fairchild is now using the X-ray inspection technique exclusively. If visual inspection methods on the wing structure were used, according to E. Mason Marcus, general supervisor, Materials Laboratory, they would "require the removal of stressed access openings and internal trim." The X-ray inspection does away with such drastic disassembly.

On the F-27, the most difficult areas to inspect are the main wing spars and the forward aft areas in the vertical legs of the spars, Marcus states.



Fairchild service technician William Meissel operates control unit to establish penetration number, exposure time, etc. Up to 25 ft. of cable connects control unit with x-ray camera.

A unique feature of the inspection program is the use of cloth templates that pinpoint each shot to be taken. By using the templates and a 104-page structural inspection manual, the technician knows not only the location of all the X-ray photographs to be taken, but also the recommended angle to set the X-ray camera, the proper penetration number to set on the machine, the exposure time, film distance, and film size.

The manual also shows typical vertical and angle X-ray pictures to show what the pictures will look like when developed and, using simulated cracks, indicates where to look for signs of ab-

normal structure.

X-ray testing on the center of the wing requires 57 separate pictures. Using the Baltospot unit this takes two and one half to three hours. Visual checking, Marcus says, would require 16 hours.

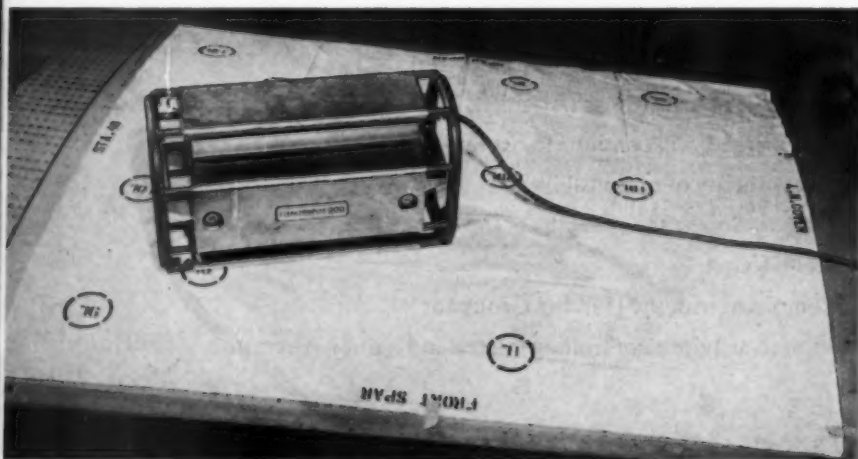
Only 90 pictures were used in the inspection program at first. Refinement of the technique, however, has boosted the number of exposures to 140. Average cost is \$1.90 per exposure.

Equipment for X-ray inspection is available directly from Westinghouse, and Fairchild encourages F-27 buyers to set up their own X-ray inspection department. The X-ray inspection manual and complete set of templates are provided by Fairchild without charge.

But, for those who lack the facilities or inclination to adopt their own program, Fairchild offers a roving inspection team which will fly anywhere in the western hemisphere that F-27s are operated to conduct 600 hr., 1,000 hr. or 1,200 hr. inspections. The crew has conducted a dozen inspections so far, from Venezuela to Canada.

The field unit—consisting of a generator control, an 85-lb. tank containing the X-ray tube, transformer, cooling device, and 25-ft. connecting cable—can be set up by the Fairchild X-ray team in five minutes.

Two years of field inspections have not turned up a single wing structural defect, according to Marcus, who comments, "The most time-consuming job is draining the plane's tank."



Camera is shown positioned for exposure. Note circle numbers on template which indicate camera positions.

'Package' Concept in New EAL Test Cell

Conversion of an engine test cell from pistons to turboprops has been accomplished for Eastern Air Lines at Miami by the George L. Nankervis Co., Detroit.

Designed originally to handle 1,800-hp piston engines, the test cell now is capable of testing turboprops up to 3,700 hp. This capability has come about without any physical enlargement of the test cell building, through the use of "packaged" accessory units, a dynamometer instead of propeller "club," and other space saving innovations.

The Nankervis Co. completed the job in 16 weeks at a cost of \$250,000. Major considerations were a reduction of test time, greater accuracy of test data and the use of an already existing facility.

The test cell was redesigned around the use of packaged units, such as the starting and motoring unit; inhibiting, lube and prop brake oil packages; fuel metering unit; and the instrument and control console. The units were pre-assembled in Nankervis' Detroit plant



Lead mechanics U. H. Futch (left) and Carl R. Blackburn are shown at the control console of Eastern Air Lines' new turboprop test cell at Miami. All controls are within easy reach. Through window can be seen engine under test.

and installed so that they may readily be removed later when the equipment is transferred to new facilities.

The use of a Clayton manufacturing company (El Monte, Calif.) dynamometer instead of a conventional

propeller for power absorption improves accuracy of the test data and cuts installation time for an engine under test from an hour and a half to 15 minutes. A significant side effect is a reduction of noise during testing.

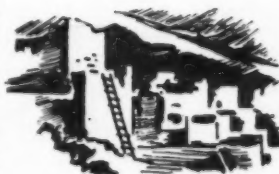
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plus meals and Air Fare

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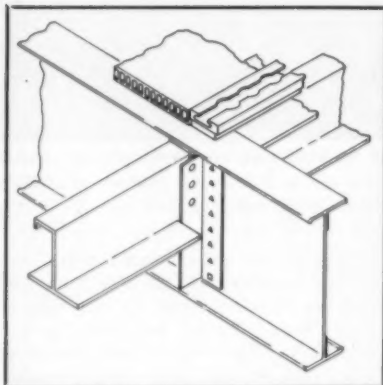
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FRONTIER AIRLINES

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Seat Design Stresses Passenger Safety

Goodyear-modified DC-3 has structural aids which protect passengers from crash loads up to 14.4 Gs



Three-quarter view shows how stringers, on which seat track rests, are tied into existing beams. Section of Bondolite flooring is shown installed.

A new structural approach to aircraft seating said to provide a maximum of safety without increasing weight has been demonstrated by Goodyear Aircraft Corp., Akron, Ohio.

The company has modified its own DC-3 along lines recommended by flight safety consultant A. Howard Hasbrook in conjunction with the Aviation Crash Injury Research Division of the Flight Safety Foundation.

Key to the modification is a series of structural tie-downs linking occupant to seat, seat to floor and floor to fuselage.



Aerotherm seats showing break-over feature. Energy-absorbing devices in legs begin to operate at nine Gs, are effective up to 14.4 Gs. Seats are shown facing the rear with longer back rest to avoid whiplash. Others face forward.

Research has shown that most deaths result from seats tearing free upon impact and hurtling through the fuselage, carrying their occupants into lethal parts of the wreckage.

In the Goodyear modification, extra longitudinal stringers were built into under-floor supports to anchor each seat leg to the framing structure.

Plywood in the cabin was replaced by super-strength Bondolite, an aluminum-faced, balsa-cored sandwich material pro-

duced by Goodyear. In the cockpit, Bondolite was used in place of sheet metal.

Tests showed the seats capable of withstanding a force of 14.4 Gs. Each seat has an energy-absorbing device in the rear legs that operates at nine Gs. Passenger seat belts are rated to 25 Gs.

Safety design in the Goodyear aircraft was rounded off by removal of sharp or unsecured objects, use of extra padding (with Goodyear-developed Plotrim), and attention to readability of emergency signs.

NEW PRODUCTS

Refueler Trucks

Aircraft refueler trucks designed specifically to service jet aircraft have been placed in production by International Harvester Company's motor truck division.

Model CO-214 refuelers are cab-over-



engine units and have an extra strong, heat-treated frame to sustain the extra weight of jet fuel.

The trucks are built to accommodate 4,400, 5,000, 5,400, 6,000, 6,500 and 8,000 gallon tanks. The three larger models have tandem-front steering axle and underslung rear suspension. All units have six-cylinder engines, direct-in-fifth transmissions, power steering, increased cooling and an engine hour meter.

Write: Dept. A/L, Consumer Relations Dept., International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

Aircraft Chronograph

A 17-jewel, multi-purpose, precision chronometer chronograph designed for

aircraft use has been released by the Heuer Time Corp. The unit combines the functions of an aircraft clock with an independent 12-hour stopwatch. It provides time-of-day, time-of-trip, and calculated ETA at a single glance.

Color coding of hands and numbers permits rapid reading. The pointer allows for simultaneous reading of Greenwich Mean Time and local time at point of origin or arrival.

For extreme accuracy, pulling out the winding stem stops the second hand so that hour and minute hands can be set to an anticipated time signal. Measuring 2 1/4 x 2 1/4 in. and priced at \$82.50, the Super Autavia is designed for permanent panel mounting.

Write: Dept. A/L, Heuer Timer Corp., 4-1 Lexington Ave., New York 17.

Ground Air Conditioner

A compact, lightweight ground air conditioner with a cooling and heating capacity of 90,000 BTUs per hour has been produced by the Garrett Corp.'s AiResearch Mfg. Co.

The Freon unit weighs 521 lbs., is enclosed in a 56 x 51 x 27 in. envelope. The compressor is hermetically sealed and motor driven, and is similar to the compressor AiResearch provides for the Boeing 707 and Lockheed Electra.

The conditioner has a 2,000 hr. service life. It supplies 3,500 cfm of ventilating air. Refrigeration and heating systems provide heating or cooling, whichever is required for the ventilating air being drawn in, circulated, and discharged through the air system.

Write: Dept. A/L, AiResearch Manufacturing Division of Los Angeles, 9851 Sepulveda Blvd., Los Angeles.

Portable Cleaner

An easily-carried vacuum cleaner designed specifically for cleaning Boeing 707 interiors has been adapted for general cleaning applications. It may be hand carried, strapped to the back, pulled along the floor on runners, or hung on a fixture.

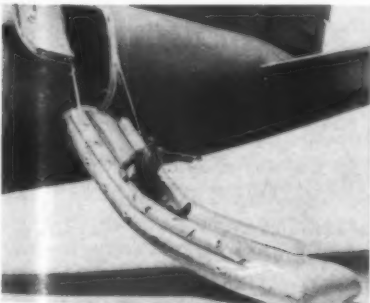
Weight is 17½ lbs.; capacity is one cubic ft. The unit is entirely air operated, and has no electrical or moving parts. It is designed for dry pickup only.

Write: Dept. A/L, F. P. Pendleton, VAC-U-Max, 1 Montgomery St., Belleville 9, New Jersey.

Evacuation Slide

A flexible evacuation slide designed for emergency exit from disabled jet airliners has been designed by the Garrett Corp.'s Air Cruisers Division. Orders have been received for 100 slides for Boeing 707s and 30 for other jet aircraft.

The inflatable slide is flexible so that the weight of a departing passenger bends it from vertical to horizontal as the pas-



senger nears the lower end. It is designed so that passengers can ease off either side of the slide during the final few feet. This provides a safe mode of exit even at extreme aircraft attitudes.

Write: Dept. A/L, Raymond E. Parr, The Garrett Corp., 9851 Sepulveda Blvd., Los Angeles, Calif.

Ear Protector

An ear protector for use with hard hats is being marketed by David Clark Co., Worcester, Mass.

Strightaway Ear Protectors are designed to attenuate high and dangerous sound levels, yet permit normal conversation.

The Model 372-20 HH includes a smooth, flexible cloth harness, placed between the webbing and the top of the

hard hat, fitted domes with comfortable vinyl foam ear seals, and a chin strap.

Write: Dept. A/L, C. Jerry Spaulding, Inc., 201 Commercial St., Worcester, Mass.

Automated Belt

A baggage handling conveyor belt that can move 32 bags a minute from aircraft to terminal has been installed for United Air Lines at San Francisco International Airport. Maker of the high



speed belting is the B. F. Goodrich Industrial Products Co., Akron, Ohio.

The belting is designed to carry baggage up grades and around turns faster than conventional package handling conveyors. Total baggage handling time from arriving aircraft to check-out in the terminal is about four minutes.

The system is both in-bound and out-bound. Belting speed is controllable from 75 to 362 ft. per minute; average operating speed is 100 ft. per minute.

Write: Dept. A/L, B. F. Goodrich Co., Akron, Ohio.

VHF Transmitter

Aircraft Radio Corp., Boonton, N.J., is making a new 360-channel, electrically-tuned VHF transmitter for primary or standby use. The radio, called the Type T-25A, is crystal controlled, with a nominal power of eight watts. The transmitter will operate on any 50 kc channel between 118.0 mc and 135.95 mc. It is



available in either 14 or 28 volt dc models and weighs 6.3 lbs. Operation is possible to 60,000 ft.

Write: Dept. A/L, Aircraft Radio Corp., Boonton, N.J.

Vibration Monitor

A lightweight system (16 lbs. complete) for monitoring vibration in DC-8 engines has been designed by Consolidated Systems Corp. and will be installed in aircraft for Alitalia and United Air Lines.

The system is comprised of a vibration pickup (one for each engine), a four-channel amplifier in the instrument rack, and an indicator on the pilot's control panel. The indicator shows vibration am-



plitude directly on a zero-to-five scale.

The pickup operates omnidirectionally, and covers the frequency range of 45 to 2,000 cps. It is air damped rather than fluid damped, and its damping is practically unaffected by temperature changes within its operating range.

Write: Dept. A/L, Consolidated Electrodynamics Corp., 360 Sierra Madre Villa, Pasadena, Calif.

Air Conditioner

A new compact air conditioner designed for mobile ground service on small and medium size passenger aircraft has been unveiled by C. G. Hokanson Co., Los Angeles.

The unit has a 10-ton refrigeration



capacity. Its gasoline engine makes the trailer self-sufficient, and it is light enough to be positioned by one man. Designated Model H-10, it is a companion unit to the 35-ton capacity Hokanson H-35.

Write: Dept. A/L, The C. G. Hokanson Co., Inc., 2140 Pontius Ave., Los Angeles 25, Calif.

Sub-Miniature ADF

A miniaturized automatic direction finder weighing just 22 lbs. and operat-

ing directly from a 28v DC supply is being offered for DC-3s and other small-to-medium aircraft by Canadian Marconi Co., Montreal.

The unit has been in use for three years and has been installed in 24 small aircraft types. It is manufactured in England by Marconi Wireless Telegraph Co. The equipment comprises a Bellini-Tosi Fixed-loop antenna, Quadrantal Error Corrector, Gonio Indicator, RF unit, IF unit and controller. Also available is a test set, Type 8287, which plugs into the front of the RF and IF units.

Write: Dept. A/L, Canadian Marconi Co., 2442 Trenton Ave., Montreal 16, Quebec, Canada.

INFO FOR THE ASKING

Filter cleaner—Ultrasonic equipment capable of cleaning aircraft hydraulic filters is described in new technical report on Pall-Cavitron HIPS cleaning system.

Write: Dept. A/L, Pall Corp., Glen Cove, New York.

Aircraft test set—Bulletin F-71 describes Airpax Electronics' Model 4B aircraft test set for testing wiring systems.

Write: Dept. A/L, Airpax Electronics, Inc., Seminole Div., Fort Lauderdale, Fla.

Motors and relays—Four-page folder illustrates Barber-Colman ac and dc fractional horsepower motors, tachometer generators and relays.

Write: Dept. A/L, Barber-Colman Co., Rockford, Illinois.

Oil tanks—Engine oil tanks for aircraft are discussed in eight-page catalog from United Aircraft Products.

Write: Dept. A/L, Publications Office, United Aircraft Products, Inc., P. O. Box 1035, Dayton 1, Ohio.

NOTES ABOUT SUPPLIERS

• Lear, Inc., Los Angeles, has contract for Autopilots and dual flight director systems for Allegheny Airlines. Units are for Convair 540s; delivery in June.

• Bendix Aviation Corp., Baltimore, Md., has upped production of airborne weather radar systems by 25% following FAA rule requiring weather radar on most commercial airliners.

• Lockheed Aircraft Service will handle

inspection and maintenance on Proteus 760 turboprop engines on Bristol Britannias at Idlewild. LAS also has contract from Boeing covering maintenance and modification of 707 spare parts inventory there.

• Aerotherm Div. of Aerotec Industries, Inc., South Norwalk, Conn., has order for four sets of passenger seats for Vickers-Armstrongs series 800 Viscounts for Australian Airlines. Seats are being produced in Bantam, Conn. 160 Viscounts with Aerotherm passenger seats are in regular operation.

• Garrett Corp.'s AiResearch Div., Los Angeles, reports that on Feb. 1 a total of 204 AiResearch flyaway and ground starting vehicles were in use at commercial airports.

• Airsupply-Aero Engineering Co., Beverly Hills, Calif., reports production of 36-lb. "Euphorian" aircraft seat for executive and commercial aircraft, by Universal Equipment Corp.

• Ministry of Italian Air Force has picked Marconi 50 cm, 500 kw radar (type S.264A/H) with two display systems, microwave radar link and ancillary equipment for new intercontinental airport at Fiumicino.

• Garrett Corp.'s AiResearch Div., Phoenix, Ariz., will produce on-board, small gas turbine engine for ground power for Mark VII Caravelles. Unit is nearly identical to company's cart and truck-mounted turbines now in use.

• Noise control equipment can be leased as well as purchased from Industrial Acoustics Co., Inc., 341 Jackson Ave., New York 54. Leasing arrangements for jet aircraft ground silencers and other soundproofing installations can be made with the American Industrial Leasing Co.

• A \$5,974,500 contract for advanced experimentation on automatic air traffic control has been awarded to the MITRE Corp., Lexington, Mass., by the FAA. The contract, one of FAA's largest in research, will include design and experimentation of a semi-automatic air traffic en-route control system using SAGE facilities.

• Lear, Inc. has received an FAA contract covering the installation of an airborne flight control system for automatic landings.

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'Lost' Package from Nepal Cached in Delhi Warehouse



Jules Gindraux, the TWA manager in Bombay (now in Rome) who directed WWP to Nepal and got the job of air-freighting the mandir to Washington. Photo was taken in an Indian temple.

Shipping a three-foot wide ornamental religious medallion—a mandir—from isolated Nepal to Washington, D. C., isn't the easiest thing in the world to get done in a hurry.

On my return to the U.S.A. I came up against the first hurdle. I had paid \$100 down to the curio shop operator in the Hotel Royal in Kathmandu (also spelled Katmandu plus some other variations), but I was anxious to complete the payment in order to seal the deal.

American Express would be the answer, of course. AMEX has branches and correspondents everywhere, so they say. But when I went to the AMEX office in Washington to have them transmit the balance, the girl behind the cage looked perplexed. Nepal? What is that? A country? Where is it? She had never heard of it. So she began looking through her instruction books. No such thing listed. She called one of the managers. He looked. No, there was no way to transmit money to anyone in Nepal.

So I wrote to Jules Gindraux, the TWA manager in Bombay (he's since been transferred to Rome) and asked him what to do. In due course Jules sent instructions to send the money to a Bombay bank and he would get it somehow to a Kathmandu bank which would pay off my debt.

Second hurdle started out easily. Gindraux said he would, somehow, get the mandir crated and airfreighted to Washington. He warned it might take a while. And it did.

But one day I got word that customs was holding a big box for me at Washington National Airport. On payment of a rather sizeable airfreight bill, I could get same if I could satisfy customs as to what this thing was.

Customs officials fascinated

I was tied up at the time so my wife went to the airport to clear the shipment. Customs insisted on opening the crate, no great surprise, and pretty soon they became fascinated. So was the agricultural man on duty. The wood used for crating had not been seen there before. The nails seemed to be hand made. The packing straw was from rice, but also novel. And the agriculture agent spotted plenty of bugs—fortunately dead. The woven cloth covering the mandir was strange and pretty dirty.

Customs carefully put all the stuff aside for burning, after further inspection, and turned over the mandir to my wife, who got it home in her car. But it was only the center piece, minus two outer rims, the headpiece and the feet. There was no sign of a second crate.

Instinctively I thought the curio shop guy had decided just to send me the inner part, either by design or because crating

the outer stuff was too difficult. Since I had the best part, I wasn't inclined to put up an argument with a shop on the other side of the world.

So I wrote to Gindraux that one crate containing the inner part had arrived. As fast as airmail letters could journey to and from Bombay, Gindraux replied that there were two crates and that both had definitely left Kathmandu. He would start searching if the second didn't show up.

Many weeks passed. No sign of a second crate. I contacted the American Ambassador at New Delhi (who had been quite interested in the project to start with) and he started checking. Several months later, a cable from Gindraux advised that the second crate had been found. It had been "lost" in the New Delhi warehouse of Indian Airlines Corp., all that time. Nobody knows why, since the bill of lading and all the labeling were in perfect order. In due course the second crate arrived in Washington. Customs went through the same procedure. I finally got the whole mandir at long last.

In short, I had made a binding deal. The friendly Nepalese was as good as his handclasp and signature. I hope he realizes that I am tremendously pleased to have this most unusual decorative item from his country. It has been seen and admired by many.

Flexible schedule

Here's something else of interest about Nepal. Maybe times have changed, but in 1958 the task of departing from the country was a little frustrating until you took the advice of the local people—just relax.

I never got the same answer when I asked what time the daily IAC plane left for Patna in India. Boris said to get to the airport "between 12:30 and 1:30." I asked again what time the plane left. "Just come out between 12:30 and 1:30." But suppose the plane left at 1, then what? Never mind, relax, come out anytime between 12:30 and 1:30.

So Ralph Cohen, of IATA, and my wife and I managed to get to the airport about 1 p.m. There was already quite a crowd there. We went through Nepalese customs—they're very curious about what you take out—and got our passports stamped. Ragged porters took our bags to the edge of the ramp alongside a growing pile on the ground. There was no sign of an airplane.

And for good reason. Nobody in Kathmandu ever knows for sure whether the plane will come at all, at least this was true in 1958. There are no communication facilities at the airport. On the roof of the small terminal was a Nepalese with his eyes glued on the pass many miles to the south. It was his job to watch for the plane. When he spotted it, he put a crude siren in motion. At that moment everybody at the terminal cheered. The plane is coming. But the siren served a dual purpose. It also served to tell the herders out on the field to get all cattle, sheep and other animals off the runway so the plane could land.

It was like a holiday celebration. For every arriving and departing passenger there were at least twenty relatives and friends. Women in gay-colored saris provided festive atmosphere. When the IAC DC-3 taxied up, an hour-long job of unloading and reloading began. There was no hurry. No wonder there is no timetable—you just go to the airport and hope the plane arrives and you'll never be late in any case.



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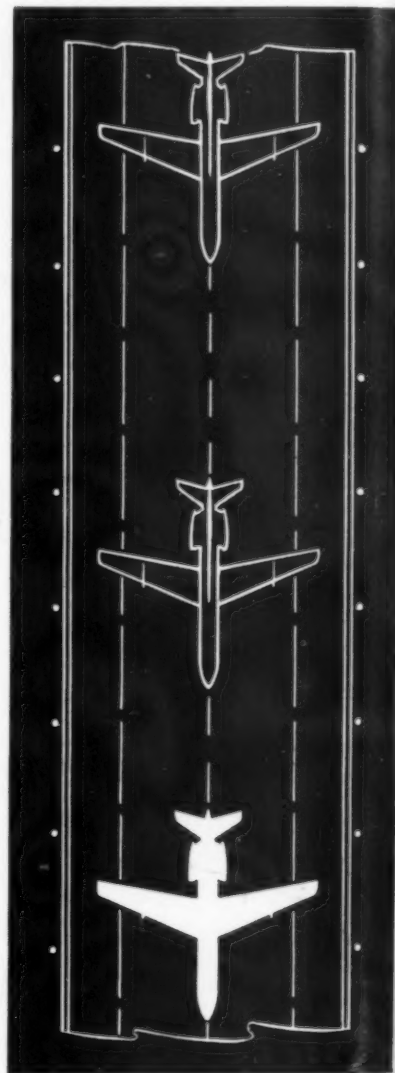
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